MECHANICAL ABBREVIATIONS

(NOTE: NOT ALL ABBREVIATIONS MAY APPEAR ON DRAWINGS)

A/E	ARCHITECT / ENGINEER
AAV	AUTOMATIC AIR VENT
AD	ACCESS DOOR
AF	AFTER FILTER
AFF	ABOVE FINISHED FLOOR
AHU	AIR-HANDLING UNIT
AMP	AMPERAGE
AP	ACCESS PANEL
APD	AIR PRESSURE DROP
ASME	AMERICAN SOCIETY OF MECHANICAL ENGINEERS
AW	AIR WASHER
BD	BUTTERFLY DAMPER
BDD	BACKDRAFT DAMPER
BFP	BACKFLOW PREVENTER
BFT	BOILER PLANT FIRE TUBE
BG	BOTTOM GRILLE
BTU	BRITISH THERMAL UNIT
BTUH	BRITISH THERMAL UNIT PER HOUR
CC	COOLING COIL
CCD	COOLING COIL CONDENSATE DRAIN
CD	CEILING DIFFUSER
CD-1	CONSTRUCTION DOCUMENTS (SUBMISSION1)
CD-2	CONSTRUCTION DOCUMENTS (SUBMISSION2)
CFH	CUBIC FEET PER HOUR
CFM	CUBIC FEET PER MINUTE
CFT	CUBIC FEET
CG	CEILING GRILLE
CH	CHILLER
CHP	CHILLED WATER PUMP
CHW	CHILLER WATER
CHR	CHILLED WATER RETURN
CHS	CHILLED WATER SUPPLY
CI	CAST IRON
CO	CLEAN OUT
CP	CONDENSATE PUMP
CR	CEILING REGISTER
CRAC	COMPUTER ROOM AIR CONDITIONING UNIT
CU	CONDENSING UNIT
CW	COLD WATER (POTABLE)
CWP	CONDENSER WATER PUMP
CWR	CONDENSER WATER RETURN (TO COOLING TOWER)
CWS	CONDENSER WATER SUPPLY (FROM COOLING TOWER)
(D)	DEMOLISH
D-1	OUTDOOR AIR DAMPER
D-2	RETURN AIR DAMPER
D-3	RELIEF AIR DAMPER
DB	DECIBELS
Db	DRY-BULB TEMPERATURE
DD-1	DESIGN DEVELOPMENT (SUBMISSION1)
DD-2	DESIGN DEVELOPMENT (SUBMISSION2)
DDC	DIRECT DIGITAL CONTROLS
DEG	DEGREE
DF	DIFFUSER
DIA	DIAMETER
DOM	DOMESTIC
DP	DEW POINT TEMPERATURE
DPR	DAMPER – AUTOMATIC
DPA	DIFFERENTIAL PRESSURE ASSEMBLY
DPS	DIFFERENTIAL PRESSURE SENSOR
DSS	DUCTLESS SPLIT-SYSTEM (EVAPORATOR)
DX	DIRECT EXPANSION
EA	EXHAUST AIR
EAT	ENTERING AIR TEMPERATURE
EER	ENERGY EFFICIENCY RATIO
EF	EXHAUST FAN
EG	EXHAUST GRILLE
EH	EXHAUST HOOD
EJ	EXPANSION JOINT
ENT	ENTERING
ER	EXHAUST REGISTER
ESP	EXTERNAL STATIC PRESSURE
EWT	ENTERING WATER TEMPERATURE
(E)	EXISTING
F	FAHRENHEIT
F&T	FLOAT AND THERMOSTATIC
F/SDPR	COMBINATION FIRE SMOKE DAMPER
FA	FREE AREA
FC	FLEXIBLE CONNECTION
FCU	FAN COIL UNIT (4 PIPE)
FCUC	FAN COIL UNIT COOLING ONLY
FCUH	FAN COIL UNIT HEATING ONLY
FCW	FORWARD CURVED WHEEL (FAN)
FD	FLOOR DRAIN
FD	FIRE DAMPER
FM	FLOW METER
FPM	FEET PER MINUTE
FPS	FEET PER SECOND
FR	FLOOR REGISTER
FS	FLOW SWITCH
FSTAT	FREEZESTAT
FT	FEET
FT-LB	FOOT-POUND
FTR	FIN TUBE RADIATION
FV	FACE VELOCITY
GA	GAUGE
GAL	GALLONS
GH	GRAVITY HOOD
GPD	GALLONS PER DAY
GPH	GALLONS PER HOUR
GPM	GALLONS PER MINUTE
GRR	GLYCOL-WATER RUN AROUND RETURN
GRS	GLYCOL-WATER RUN AROUND SUPPLY
GS	GALVANIZED STEEL
H	HUMIDIFIER
H&CW	HOT & COLD WATER
HC	HEATING COIL
HD	HEAD
HD	HOOD
HOA	HAND/OFF/AUTOMATIC
HP	HORSEPOWER
HRC	HEAT RECOVERY COIL
HRD	HEAT RECOVERY DEVICE
HRW	HEAT RECOVERY WHEEL
HSTAT	HUMIDISTAT
HVU	HEATING AND VENTILATING UNIT
HW	HOT WATER
HWC	HOT WATER COIL
HWHC	HOT WATER HEATING COIL
HWP	HEATING HOT WATER PUMP
HWR	HEATING HOT WATER RETURN
HWS	HEATING HOT WATER SUPPLY
HWUH	HOT WATER UNIT HEATER
HX	HEAT EXCHANGER
HZ	HERTZ
I/O	INPUT/OUTPUT
IAQ	INDOOR AIR QUALITY
ID	INSIDE DIAMETER
IFB	INTEGRAL FACE AND BYPASS
IN	INCHES
IN HG	INCHES OF MERCURY
IN WC	INCH WATER COLUMN
IRH	INFRARED HEATER

IS	INSECT SCREEN
IU	INDUCTION UNIT
IV	INLET VANES
J	(INTENTIONALLY LEFT BLANK)
kPa	KILOPASCAL
kW	KILOWATT
L/s	LITERS PER SECOND
LAT	LEAVING AIR TEMPERATURE
LBS/HR	POUNDS PER HOUR
LF	LINEAR FOOT (FEET)
LH	LATENT HEAT
LPR	LOW PRESSURE RETURN (STEAM CONDENSATE)
LPRC	LOW PRESSURE STEAM RETURN (CLEAN)
LPS	LOW PRESSURE STEAM
LPSC	LOW PRESSURE STEAM (CLEAN)
LTCP	LOCAL TEMPERATURE CONTROL PANEL
LVG	LEAVING
LVR	LOUVER
LWT	LEAVING WATER TEMPERATURE
MA	MIXED AIR
MAU	MAKE-UP AIR UNIT
MAX	MAXIMUM
MB	MIXING BOX
MBH	1000 BTUH
MCA	MINIMUM BRANCH CIRCUIT AMPACITY
MIN	MINIMUM
MM	MILLIMETER
MOD	MOTOR OPERATED DAMPER
MOV	MOTOR OPERATED VALVE
MTD	MEAN TEMPERATURE DIFFERENCE
MVD	MANUAL VOLUME DAMPER
MZ	MULTI-ZONE
(N)	NEW
NA	NOT APPLICABLE
NC	NORMALLY CLOSED
NO	NORMALLY OPEN
NOM	NOMINAL
NTS	NOT TO SCALE
OA	OUTSIDE AIR
OAG	OUTSIDE AIR GRILLE
OAI	OUTSIDE AIR INTAKE
OD	OUTSIDE DIAMETER
P	PUMP
PA	PASCAL
PC	PUMPED CONDENSATE
PCF	POUNDS PER CUBIC FOOT (FEET)
PD	PRESSURE DROP
PG	PRESSURE GAGE
PHC	PREHEAT COIL
PPM	PARTS PER MILLION
PSI	POUNDS PER SQUARE INCH
PSIA	POUNDS PER SQUARE INCH – ABSOLUTE
PSIG	POUNDS PER SQUARE INCH – GAGE
PSV	PRESSURE SAFETY VALVE
(R)	RELOCATE/RELOCATED
R/E	RETURN OR EXHAUST
RA	RETURN AIR
RAT	RETURN AIR TEMPERATURE
RCP	RADIANT CEILING PANEL
REA	RELIEF AIR
RF	RETURN FAN
RG	RETURN GRILLE
RH	RELATIVE HUMIDITY
RHC	REHEAT COIL
RLA	RUN LOAD AMPERE
RO	REVERSE OSMOSIS
RPM	REVOLUTIONS PER MINUTE
RR	RETURN REGISTER
RTU	ROOF TOP UNIT
RV	RELIEF VALVE
SA	SUPPLY AIR
SAD	SOUND ATTENUATOR DEVICE
SAT	SUPPLY AIR TEMPERATURE
SCFM	STANDARD CUBIC FEET PER MINUTE
SD	SMOKE DETECTOR
SD	SUPPLY AIR DIFFUSER
SD-1	SCHEMATIC DESIGN (SUBMISSION1)
SD-2	SCHEMATIC DESIGN (SUBMISSION2)
SDPR	SMOKE DAMPER
SDR	SMOKE DAMPER (RETURN)
SDS	SMOKE DAMPER (SUPPLY)
SEN	SENSIBLE HEAT
SF	SUPPLY FAN
SG	SUPPLY AIR GRILLE
SP	STATIC PRESSURE
SP GR	SPECIFIC GRAVITY
SPS	STATIC PRESSURE SENSOR
SQ FT	SQUARE FOOT (FEET)
SR	SUPPLY AIR REGISTER
SS	STAINLESS STEEL
ST	STEAM TRAP
SVS	STEAM VENT SILENCER
T&PCV	TEMPERATURE AND PRESSURE CONTROL VALVE
TAB	TESTING, ADJUSTING, BALANCE
TD	TEMPERATURE DIFFERENCE
TDH	TOTAL DYNAMIC HEAD
TG	TRANSFER GRILLE
TP	TRAP
TR	TOP REGISTER
TSP	TOTAL STATIC PRESSURE
TSTAT	THERMOSTAT
TU	TERMINAL UNIT
UC	UNDER CUT
UL	UNDERWRITERS LABORATORY
V	VALVE
VAV	VARIABLE AIR VOLUME
VB	VACUUM BREAKER
VD	VOLUME DAMPER (MANUAL OPPOSED BLADE)
VFD	VARIABLE FREQUENCY DRIVE
VI	VIBRATION ISOLATOR
VIV	VARIABLE INLET VANES
VPS	VARIABLE PRIMARY SYSTEM
VR	VACUUM (STEAM CONDENSATE) RETURN
W	WATTS
Wb	WET-BULB (TEMPERATURE)
WC	WATER COOLED
WCACU	WATER-COOLED COMP RM A/C
WEF	WALL EXHAUST FAN
WF	WATER FILTER
WFCV	WATER FLOW CONTROL VALVE
WFM	WATER FLOW METER
WFMD	WATER FLOW MEASURING DEVICE
WG	WATER GAGE
WHA	WATER HAMMER ARRESTOR

GENERAL PIPING SYMBOLS

SYMBOL LIST SHOWN IS FOR GENERAL REFERENCE ONLY. THE PRESENCE OF A SYMBOL DOES NOT IMPLY ITS USE ON THIS PROJECT. REFER TO THE DRAWINGS FOR SPECIFIC SYMBOLS USED.

- DIRECTION OF PIPE PITCH (DOWN) 1/8" PER FOOT
- DIRECTION OF FLOW
- ANCHOR
- REDUCER OR INCREASER
- ECCENTRIC REDUCER
- TOP CONNECTION, 45° OR 90°
- BOTTOM CONNECTION, 45° OR 90°
- SIDE CONNECTION
- CAPPED OUTLET
- RISE OR DROP IN PIPE
- UNION
- PIPE UP
- PIPE DOWN
- INVERTED BUCKET TRAP SET INCLUDING PIPING ACCESSORIES SEE DETAIL
- FLOAT & THERMOSTATIC TRAP SET INCLUDING PIPING ACCESSORIES SEE DETAIL
- THERMOSTATIC TRAP SET INCLUDING PIPING ACCESSORIES SEE DETAIL
- THERMOMETER
- PRESSURE GAGE
- FLOW ELEMENT (FE)
- REFRIGERANT SIGHT GLASS
- TEST PLUG (PRESSURE/TEMPERATURE)
- AUTOMATIC AIR VENT (AV)
- MANUAL AIR VENT (MV)
- QUICK-COUPLE HOSE CONNECTOR

PIPING SYMBOLS

Line label	Description
HPS	HIGH PRESSURE STEAM (60 PSIG AND ABOVE)
HPR	HIGH PRESSURE STEAM CONDENSATE RETURN
MPS	MEDIUM PRESSURE STEAM (16 PSIG THRU 59 PSIG)
MPR	MEDIUM PRESSURE STEAM CONDENSATE RETURN
LPS	LOW PRESSURE STEAM (15 PSIG AND BELOW)
LPR	LOW PRESSURE STEAM CONDENSATE RETURN
PC	CONDENSATE PUMP DISCHARGE
HWS	HOT WATER HEATING SUPPLY
HWR	HOT WATER HEATING RETURN
GHS	GLYCOL-WATER HEATING SUPPLY
GHR	GLYCOL-WATER HEATING RETURN
CHWS	CHILLED WATER SUPPLY
CHWR	CHILLED WATER RETURN
GCS	CHILLED GLYCOL-WATER SUPPLY
GCR	CHILLED GLYCOL-WATER RETURN
MW	MAKE-UP WATER
D	DRAIN LINE
V	VENT LINE
GRS	GLYCOL-WATER RUN AROUND SUPPLY
GRR	GLYCOL-WATER RUN AROUND RETURN
TC	TUBE CLEANER WATER SUPPLY
CF	CHEMICAL FEED
OFL	OVERFLOW
A	COMPRESSED AIR
CW	COLD WATER (CITY WATER)
SW	SOFTENED WATER
HW	HOT WATER
RO	REVERSE OSMOSIS

VALVE SYMBOLS

- GATE VALVE – THREADED/FLANGED
- GLOBE VALVE – THREADED/FLANGED
- GATE VALVE WITH 3/4" HOSE ADAPTER
- CHECK VALVE
- WYE STRAINER (WITH BALL VALVE & HOSE CONNECTION)
- WYE STRAINER WITH VALVED DRAIN AND QUICK-COUPLE HOSE CONNECTOR
- FLEXIBLE CONNECTION
- ANGLE GLOBE VALVE
- BUTTERFLY VALVE
- BALL VALVE
- MODULATING CONTROL VALVE
- MODULATING CONTROL BUTTERFLY VALVE
- TWO POSITION CONTROL VALVE
- THREE-WAY MODULATING CONTROL VALVE
- THREE-WAY TWO POSITION CONTROL VALVE
- PRESSURE REGULATING VALVE
- PRESSURE SAFETY VALVE
- AUTOMATIC BALANCING CONTROL VALVE
- WATER BALANCE DEVICE
- CIRCUIT SETTER VALVE
- GATE VALVE WITH GLOBE-VALVED BYPASS
- PLUG VALVE
- CONTROL VALVE (CV) – FLOAT-OPERATED
- PRESSURE REDUCING VALVE (PRV)

DUCTWORK SYMBOLS

- UP / DN — SUPPLY DUCT (UP & DOWN)
- UP / DN — EXHAUST DUCT (UP & DOWN)
- UP / DN — RETURN DUCT (UP & DOWN)
- ROUND AND SQUARE 4-WAY CEILING DIFFUSERS
- SQUARE 3-WAY CEILING DIFFUSERS
- SQUARE 2-WAY CEILING DIFFUSERS
- SQUARE 1-WAY CEILING DIFFUSERS
- SUPPLY TOP REGISTER OR GRILLE (WALL TYPE)
- EXHAUST OR RETURN CEILING REGISTER OR GRILLE
- EXHAUST OR RETURN BOTTOM REGISTER OR GRILLE (WALL TYPE)
- EXHAUST OR RETURN REGISTER OR TOP GRILLE (WALL TYPE)
- VANED ELBOW & AIR SPLIT TYPE DUCT TAKE-OFF
- CONNECT NEW DUCT TO EXISTING DUCT
- R — INCLINED RISE, IN DIRECTION OF AIR FLOW
- D — INCLINED DROP, IN DIRECTION OF AIR FLOW
- LIMIT OF DEMOLITION
- FC — FLEXIBLE CONNECTION, EQUIPMENT, VIBRATION, OR SEISMIC
- VANED ELBOW (PROVIDE ALL SQUARE OR RECTANGULAR ELBOWS WITH VANES EVEN IF SYMBOL IS MISSING)
- VANED ELBOW (SHORT RADIUS)
- STANDARD RADIUS ELBOW (LONG RADIUS)
- 10x8 — NEW DUCT (INSIDE DIMENSIONS: WIDTH x DEPTH)
- EXISTING DUCT TO REMAIN
- EXISTING DUCT TO BE REMOVED
- FLEXIBLE DUCTWORK (INSULATED)
- VD — MANUAL VOLUME DAMPER
- 2 1 / 4 1/2 — POINT OF CHANGE IN DUCT CONSTRUCTION BY STATIC PRESSURE CLASS. THE NUMBER ASSIGNS PRESSURE CLASS (IN. OF WATER) WHICH WILL ACCOMMODATE MAXIMUM OPERATING PRESSURE IN THE DUCT SUBSECTION. THE SYMBOL CONTINUES THE ASSIGNMENT UNTIL THE DUCT TERMINATES OR ANOTHER SYMBOL APPEARS. A "N" SUPERSCRIPT INDICATES NEGATIVE PRESSURE.
- AUTOMATIC CONTROL DAMPER MODULATING
- AUTOMATIC CONTROL DAMPER TWO POSITION
- F/S DPR — COMBINATION FIRE/SMOKE DAMPER
- 45° SUPPLY / 45° RETURN — STANDARD BRANCH SUPPLY OR RETURN, NO SPLITTER (45° TAP)
- CHILLED BEAM (CB)
- SD — SMOKE DETECTOR – DUCT MOUNTED
- SD — SMOKE DAMPER
- AIR TERMINAL UNIT WITH INTEGRAL REHEAT COIL
- CONDENSATE PUMP
- WR — WALL RADIANT HEAT PANEL

GENERAL NOTES AND CONDITIONS

1. THESE DRAWINGS WERE PREPARED FROM INFORMATION TAKEN FROM THE AVAILABLE BUILDING DRAWINGS, ARCHITECTURAL BACKGROUNDS PROVIDED BY THE OWNER AND FIELD SURVEY INFORMATION COMPILED BY THE ENGINEERING DESIGN TEAM FOR THE PURPOSE OF ENGINEERING DESIGN. EXISTING CONDITIONS ARE SHOWN AS ACCURATELY AS POSSIBLE. THERE IS THE POSSIBILITY THAT CONDITIONS SHOWN ARE NOT EXACTLY AS EXISTING. CONTRACTOR SHALL VERIFY ALL DIMENSIONS, ELEVATIONS, LOCATIONS, SIZES AND CONDITIONS AT THE SITE AND REPORT ANY DISCREPANCIES TO THE ENGINEER PRIOR TO BEGINNING INSTALLATION OR FABRICATION WORK.
   - 1.1. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO REVIEW THE PLANS AND SPECIFICATIONS, AS WELL AS ALL RELATED PROJECT PLANS AND SPECIFICATIONS FROM OTHER DISCIPLINES, TO BECOME FAMILIAR WITH THE FULL PROJECT SCOPE AND COORDINATED RESPONSIBILITIES.
   - 1.2. SHOULD IT APPEAR THAT THE WORK INTENDED TO BE DESCRIBED OR RELATED WORK ARE NOT SUFFICIENTLY DETAILED OR EXPLAINED ON THE DRAWINGS, OR IN THE SPECIFICATIONS, CONSULT THE ENGINEER FOR NECESSARY CLARIFICATIONS, AND CONFORM TO THOSE CLARIFICATIONS INSOFAR AS THEY ARE CONSISTENT WITH THE ORIGINAL DRAWINGS AND SPECIFICATIONS. IN NO CASE SHALL WORK PROCEED IN UNCERTAINTY.
   - 1.3. EQUIPMENT ARRANGEMENTS ARE DESIGNED TO SHOW PREFERRED CONFIGURATIONS TO SUIT KNOWN CONDITIONS. ACTUAL INSTALLATION BY CONTRACTOR MAY BE ALTERED AS REQUIRED TO SUIT FIELD CONDITIONS ENCOUNTERED DURING CONSTRUCTION WITHOUT COMPROMISING THE INTENT OF THE ORIGINAL DESIGN. COORDINATE ANY MODIFICATIONS WITH THE ENGINEER AND OWNER PRIOR TO STARTING WORK IN AREAS AFFECTED.
   - 1.4. THE CONTRACTOR SHALL CHECK AND VERIFY ALL DIMENSIONS AND CONDITIONS AT SITE PRIOR TO STARTING WORK.
   - 1.5. DO NOT SCALE DRAWINGS.
2. THE CONTRACTOR WILL BE RESPONSIBLE FOR ENSURING THAT ALL RULES AND REGULATIONS, INCLUDING THOSE WHICH MAY BE ISSUED BY THE OWNER, ARE BEING OBSERVED, PARTICULARLY WORKPLACE SAFETY AND THE CONDUCT OF ALL THOSE EMPLOYED DIRECTLY AND INDIRECTLY ON THE PREMISES, AND THE OWNER'S EMPLOYEES WHO MAY BE IMPACTED OR AFFECTED BY CONSTRUCTION ACTIVITIES. THE CONTRACTOR WILL INSTALL SIGNAGE, BARRIERS, AND OTHER MEANS TO PROVIDE WARNING AND PERSONNEL SAFETY. PLACEMENT OF THESE ITEMS WILL BE COORDINATED WITH THE OWNER AND HIS ONGOING OPERATIONS AND WILL PROMPTLY BE REVISED WHEN WORK IN A PARTICULAR AREA HAS BEEN COMPLETED.
   - 2.1. DURING PERFORMANCE OF WORK, THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVISION AND MAINTENANCE OF WARNING SIGNS, LIGHT SIGNAL DEVICES, GUARD LIGHTS, BARRICADES, GUARD RAILS, FENCES AND OTHER DEVICES, APPROPRIATELY LOCATED ON AND AROUND THE JOB SITE WHICH GIVE PROPER AND UNDERSTANDABLE WARNING TO PERSONS WITH REGARD TO HAZARDOUS CONDITIONS, EQUIPMENT AND OPERATIONS BEING PERFORMED IN CONJUNCTION WITH THE WORK.
3. THE CONTRACTOR SHALL BE RESPONSIBLE TO COORDINATE WITH OTHER TRADES FOR ITEMS IN THEIR SCOPE OF WORK WHICH COULD REQUIRE ADDITIONAL MECHANICAL/PLUMBING WORK, AND ITEMS THAT ARE NOT INDICATED ON THE DRAWINGS.
4. THIS INSTALLATION WILL CONFORM TO ALL CODES AND THE REQUIREMENTS OF FEDERAL, STATE, AND LOCAL REGULATORY AGENCIES HAVING JURISDICTION. IN PARTICULAR, THE WORK WILL BE IN ACCORDANCE WITH THE CURRENT ADOPTED EDITION OF THE NATIONAL FIRE PROTECTION ASSOCIATION CODES AND ALL OF ITS APPLICABLE SUBCODES AND AMENDMENTS.
5. ALL WORK WILL BE LAWFULLY EXECUTED IN A NEAT AND WORKMANLIKE MANNER AND WILL BE COMPLETED IN ACCORDANCE WITH THE GOVERNING CODES (ABOVE), INDUSTRY STANDARDS, AND IN CONFORMANCE WITH THE MANUFACTURERS RECOMMENDATIONS AND REQUIREMENTS.
6. WORK UNDER THIS CONTRACT SHALL CONSIST OF THE CONTRACTOR PROVIDING ALL LABOR, MATERIALS, AND SERVICES, INCLUDING WORK NOT SPECIFICALLY SHOWN BUT REASONABLY IMPLIED. THIS SHALL INCLUDE CUTTING, PATCHING AND RESTORATION OF EXISTING SURFACES DAMAGED DURING THE CONSTRUCTION. CONTRACTOR SHALL ALSO PROVIDE ALL EQUIPMENT SHOWN OR SPECIFIED OR AN APPROVED EQUIVALENT. SUBSTITUTED EQUIPMENT OR MATERIALS SHALL NOT BE INSTALLED UNTIL GIVEN WRITTEN APPROVAL BY THE OWNER.
7. CONTRACTOR SHALL BE RESPONSIBLE FOR COSTS INCURRED FOR NONCOMPLIANCE WITH THESE CONTRACT DOCUMENTS. CONTRACTOR WILL NOT BE ALLOWED CHANGE ORDERS FOR PROBLEMS ARISING FROM NEGLECT OF PROVISIONS INCLUDED IN THESE CONDITIONS.
8. MAINTAIN ORDERLY HOUSEKEEPING DURING CONSTRUCTION, AND UPON SUBSTANTIAL COMPLETION PERFORM FINAL CLEANUP. REMOVE CONSTRUCTION RUBBISH, SCAFFOLDING, EQUIPMENT, TEMPORARY PROTECTION, TEMPORARY FIELD STRUCTURES, AND OTHER MATERIALS OR EQUIPMENT THAT WAS REQUIRED IN CONNECTION WITH THE CONSTRUCTION, BUT NOT A PERMANENT PART THEREOF.
9. THOSE PERFORMING WORK AS A CONTRACTOR MUST EXAMINE SUBSTRATES AND CONDITIONS UNDER WHICH THE WORK IS TO BE PERFORMED AND NOTIFY THE CONTRACTOR IN WRITING, OF CONDITIONS DETRIMENTAL TO THE PROPER AND TIMELY COMPLETION OF THE WORK. COMMENCEMENT OF WORK BY A TRADE ON A SURFACE OR CONSTRUCTION SHALL IMPLY ACCEPTANCE OF SUCH SURFACE OR CONSTRUCTION. DO NOT PROCEED WITH INSTALLATION UNTIL UNSATISFACTORY CONDITIONS HAVE BEEN CORRECTED.
10. THE CONTRACTOR SHALL SECURE ALL PERMITS AND APPLICATIONS AND PAY ANY AND ALL FEES AS REQUIRED. THE CONTRACTOR SHALL GIVE ALL NECESSARY NOTICES AND CERTIFICATES OF INSPECTION REQUIRED BY THE AUTHORITIES HAVING JURISDICTION. DELIVER ALL PERMITS, CERTIFICATES AND APPROVALS TO THE OWNER AGENT PRIOR TO FINAL ACCEPTANCE OF THE WORK. THE CONTRACTOR MUST FILE NECESSARY DRAWINGS, PREPARE DOCUMENTS AND MAKE APPLICATIONS FOR EACH REQUIRE PERMIT AND INSPECTION, PRIOR TO COMMENCING WORK TO AVOID DELAYS DURING CONSTRUCTION.
11. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS AND MANUFACTURERS DATA SHEETS ON ALL EQUIPMENT AND MATERIALS SPECIFIED ON DRAWINGS FOR APPROVAL BY OWNER OR AGENT FOR THE OWNER. THESE DRAWINGS OR SHEETS SHALL CONTAIN ALL NECESSARY DATA, I.E., MANUFACTURER, CATALOG NUMBER, SIZE, DIMENSIONS, CAPACITY, WIRING DETAILS AND ALL OTHER ENGINEERING DATA AND DETAILS NECESSARY FOR COMPLETE CLARITY AND INSTALLATION.
12. THE CONTRACTOR SHALL KEEP ONE SET OF THE LATEST ISSUE OF DRAWINGS WHICH SHALL REFLECT THE ACTUAL INSTALLED CONDITIONS AND CONNECTIONS OF ALL EQUIPMENT AND DEVICES. THE CONTRACTOR SHALL PROVIDE COPIES OF ALL MAINTENANCE INFORMATION AND INSTRUCTIONS RECEIVED WITH EQUIPMENT AND SYSTEMS. ALL "AS-BUILT" DRAWINGS AND MISCELLANEOUS INFORMATION SHALL BE GIVEN TO THE OWNER AND ENGINEER AT COMPLETION OF WORK. THE CONTRACTOR SHALL GUARANTEE ALL MATERIAL AND LABOR TO BE FREE FROM DEFECTS FOR A ONE YEAR PERIOD FROM THE TIME OF OWNER ACCEPTANCE. ANY DEFECTS OCCURRING DURING THIS PERIOD SHALL BE CORRECTED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER.
13. AS DIRECTED BY THE OWNER, ALL EXISTING EQUIPMENT AND MATERIAL IN USABLE CONDITION THAT IS REMOVED SHALL REMAIN THE PROPERTY OF THE OWNER, OR HANDLED AS INSTRUCTED BY THE OWNER, BE DISPOSED OF BY THE CONTRACTOR. ALL MATERIALS DEEMED FOR REMOVAL SHALL BE RECYCLED WHENEVER POSSIBLE, IN ACCORDANCE WITH THE REQUIREMENTS SET FORTH WITHIN SPECIFICATION SECTION 01 74 19 (CONSTRUCTION WASTE MANAGEMENT).
14. CONTRACTOR IS TO PROVIDE ALL REQUIRED SCAFFOLDING, LADDERS, RIGGING, HOISTING AND ALL OTHER EQUIPMENT REQUIRED FOR THE INSTALLATION OF THEIR WORK.
15. ESTABLISH PASSAGE CLEARANCES REQUIRED TO DELIVER, INSTALL AND ERECT ALL REQUIRE EQUIPMENT. IF STRUCTURES, EQUIPMENT AND SYSTEMS MUST BE ALTERED TO PROVIDE PASSAGE OF EQUIPMENT, THE CONTRACTOR SHALL RESTORE STRUCTURES, EQUIPMENT AND SYSTEMS TO THEIR ORIGINAL CONDITION AT THE CONTRACTOR'S EXPENSE; INCLUDING REMOVING AND REPLACEMENT OF ALL CEILING AS REQUIRED TO COMPLETE THE WORK.

HVAC NOTES AND CONDITIONS:

1. ALL HVAC EQUIPMENT SHALL MEET THE REQUIREMENTS SET FORTH IN THE ANSI/ASHRAE/IESNA STANDARD 90.1 ENTITLED "ENERGY STANDARDS FOR BUILDINGS EXCEPT LOW-RISE RESIDENTIAL BUILDINGS".
2. ALL METALLIC DUCTWORK SHALL BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH SMACNA STANDARD "HVAC DUCT CONSTRUCTION STANDARDS-METAL AND FLEXIBLE", NFPA STANDARD 90A TITLED "INSTALLATION OF AIR CONDITIONING AND VENTILATION SYSTEMS", AND "SMACNA HVAC AIR DUCT LEAKAGE TEST MANUAL".
   ALL PRIMARY SUPPLY AIR DUCTWORK (UPSTREAM OF VAV BOXES) SHALL BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH SMACNA 4 IN WG PRESSURE CLASS, SEAL CLASS A, UNLESS OTHERWISE NOTED. SECONDARY SUPPLY AIR (DOWNSTREAM OF VAV BOXES), RETURN AIR, AND EXHAUST AIR DUCTWORK SHALL BE CONSTRUCTED IN ACCORDANCE WITH SMACNA 3 IN WG PRESSURE CLASS, SEAL CLASS B, UNLESS OTHERWISE NOTED.
3. ALL DUCTWORK DIMENSIONS, AS SHOWN ON THE DRAWINGS, ARE INTERNAL CLEAR DIMENSIONS. CONTRACTOR SHALL INCREASE THE DUCT SIZE ACCORDINGLY TO COMPENSATE FOR ACOUSTICAL DUCT LINING THICKNESS (UNLESS OTHERWISE NOTED). CONTRACTOR MAY ADJUST DUCT SIZES ACCORDINGLY TO SUIT FIELD CONDITIONS AS LONG AS THE DUCT FREE AREA AND STATIC PRESSURE DROP ARE EQUAL TO THE PROJECT DOCUMENTS.
4. CONTRACTOR SHALL PROVIDE ACCESS DOORS IN DUCTWORK FOR OPERATION, ADJUSTMENT AND MAINTENANCE OF ALL FANS, VALVES, COILS AND MECHANICAL EQUIPMENT.
5. ADEQUATELY SIZED ACCESS PANELS SHOULD BE PROVIDED ON BOTH SIDES OF THE SMOKE DETECTORS, FIRE DAMPERS, SMOKE DAMPERS, VOLUME DAMPERS, HUMIDIFIERS, COILS AND OTHER DEVICES LOCATED IN THE DUCTWORK WHICH REQUIRE INSPECTION AND/OR MAINTENANCE.
6. CONTRACTOR SHALL PROVIDE FLEXIBLE CONNECTIONS IN ALL DUCT WORK SYSTEMS (SUPPLY, RETURN, VENTILATION AIR AND EXHAUST) CONNECTED TO ALL AIR HANDLING UNITS, FANS AND OTHER EQUIPMENT WHICH REQUIRE VIBRATION ISOLATION. FLEXIBLE CONNECTIONS SHALL BE PROVIDED AT THE POINT OF CONNECTION TO THE EQUIPMENT (UNLESS NOTED OTHERWISE).
7. ALL AIR HANDLING SYSTEMS SHALL BE DESIGNED AND INSTALLED WITH BALANCE DAMPERS LOCATED IN THE MAIN SUPPLY, EXHAUST AND OUTSIDE AIR DUCTS FOR PROPER BALANCING OF EACH SYSTEM, AND FOR EACH SUPPLY, RETURN, OR EXHAUST GRILLE, UNLESS OTHERWISE NOTED.
8. DUCTWORK WILL INCLUDE ALL DUCTS, FITTINGS, TURNING VANES, DAMPERS, SUPPORTS, AND ALL ACCESSORIES, SUBASSEMBLIES, AND PARTS INCORPORATED THEREIN OR REQUIRED FOR THE INSTALLATION AND COMPLETION OF SYSTEMS. ALL SUPPLY AND RETURN DUCT BRANCHES SHALL BE DESIGNED AND INSTALLED WITH BALANCE DAMPERS.
9. SMOOTH TURN RADIUS DUCTWORK OR TURNING VANES AND 45 DEGREE ENTRY OR CONICAL DUCT BRANCH CONNECTIONS SHALL BE USED THROUGHOUT.
10. ALL DAMPER SHAFTING, RODS AND LINKAGE WILL HAVE CORROSION RESISTANT FINISH. ALL VOLUME DAMPERS WILL MOVE FREELY THROUGH FULL TRAVEL WITHOUT BINDINGS AFTER INSTALLATION OF INSULATION.
11. ALL DUCTWORK SHALL BE COORDINATED WITH ALL TRADES INVOLVED. OFFSETS IN DUCTS, INCLUDING DIVING DUCTS AND TRANSITIONS AROUND OBSTRUCTIONS, SHALL BE PROVIDED AT NO ADDITIONAL COST.
12. COORDINATE DIFFUSER, REGISTER, AND GRILLE LOCATIONS WITH ARCHITECTURAL REFLECTED CEILING PLANS, LIGHTING AND OTHER CEILING ITEMS AND MAKE MINOR DUCT MODIFICATIONS TO SUIT.
13. INSTALL NEW THERMOSTATS FOR ALL NEW AND EXISTING ZONES UNLESS OTHERWISE INDICATED.
14. CONTRACTOR SHALL PROPERLY SUPPORT & BRACE ALL DUCTWORK IN ACCORDANCE WITH SMACNA STANDARDS FROM BUILDING STRUCTURE ONLY. DUCTWORK SUPPORT MATERIALS, UNLESS OTHERWISE INDICATED, SUPPORTS, FASTENERS, ANCHORS, STRAPS, TRIM AND ANGLES WILL GENERALLY BE THE SAME MATERIAL AS THE DUCTWORK, HOT DIPPED GALVANIZED.
15. DUCT HANGERS, SUPPORTS AND METHODS OF INSTALLATION WILL CONFORM TO SMACNA STANDARDS AND THE MANUFACTURERS' INSTALLATION REQUIREMENTS WHERE NOT OTHERWISE SPECIFIED, INDICATED OR REQUIRED.
16. ALL INTERIOR AND EXTERIOR WALL, CEILING AND ROOF OPENINGS AND DUCT AND PIPE THROUGH WALL PENETRATIONS, FRAMING, SLEEVES, WEATHERPROOFING AND FIRE SEALING SHALL BE PROVIDED AND INSTALLED BY THE CONTRACTOR, UNLESS NOTED OTHERWISE.
17. CONTRACTOR SHALL PROVIDE AND INSTALL ALL FIRE DAMPERS IN ACCORDANCE WITH UL 555 AND MANUFACTURER'S REQUIREMENTS WHERE DUCTS PENETRATE FIRE RATED WALLS OR FLOORS. ALL FIRE DAMPERS SHALL BE UL LISTED AND LABELED CONSISTENT WITH THE WALLS OR FLOORS THAT ARE PENETRATED. PROVIDE ACCESS DOORS SIZED AND LOCATED TO FACILITATE TESTING AND RESETTING OF ALL FIRE DAMPERS.
18. INSULATE PER SPECIFICATION SECTION 23 07 11.
19. THE NEW DUCT SYSTEM IS TO BE CLEANED THOROUGHLY OF ALL DEBRIS BEFORE INSTALLING INLET/OUTLET DEVICES.
20. CONTRACTOR SHALL TEST ADJUST & BALANCE EXISTING SYSTEMS PRIOR TO DEMOLITION WHERE INDICATED ON MECHANICAL DEMOLITION PLANS. UPON CONSTRUCTION COMPLETION, TEST AND BALANCE THE COMPLETED SYSTEM. ALL BALANCING WORK SHALL BE DONE UNDER THE DIRECT SUPERVISION OF AN AABC OR NEBB-QUALIFIED SUPERVISOR WHO SHALL CERTIFY THE RESULTS.
21. TEST, ADJUST AND BALANCE WORK WILL DEMONSTRATE THAT ALL SYSTEMS OPERATE AS THEY WERE INTENDED TO. UPON COMPLETION OF THE WORK A WRITTEN TEST AND BALANCE REPORT WILL BE SUBMITTED TO THE OWNER. FORMS AND PROCEDURES UTILIZED FOR THIS WORK WILL BE AS PROPOSED BY THE AABC OR OTHER NATIONALLY RECOGNIZED ORGANIZATION ACCEPTABLE TO THE OWNER.
22. ALL DUCTWORK,PIPING AND EQUIPMENT SHOWN ON NEW WORK PLANS AND DETAILS SHALL BE CONSIDERED AS NEW UNLESS IDENTIFIED AS EXISTING TO REMAIN.

PIPING NOTES

1. ALL PIPING MATERIALS AND COMPONENTS INCLUDING FITTINGS, PIPE, FLANGES, VALVES, ETC. SHALL BE DESIGNED, FABRICATED AND INSTALLED PER APPROPRIATE SECTIONS OF THE LATEST ANSI AND ASTM CODES AND STANDARDS AND THE MATERIAL SPECIFICATIONS FOUND IN THE PROJECT DOCUMENTS.
2. CONTRACTOR TO INSTALL HIGH POINT VENTS AT ALL SYSTEM HIGH POINTS AND LOW POINT DRAINS AT SYSTEM LOW POINTS. VENTS AND DRAINS ARE REQUIRED TO FACILITATE SYSTEM DRAINING AND VENTING DURING TESTING AND START-UP.
3. SURFACES TO BE SOLDERED SHALL BE CLEANED BRIGHT. THE JOINTS SHALL BE PROPERLY FLUXED AND MADE WITH APPROVED SOLDER. SOLDER JOINTS FOR POTABLE WATER SHALL BE MADE WITH A SOLDER CONTAINING NOT MORE THAN 0.2 PERCENT LEAD.
4. UNIONS SHALL BE INSTALLED AT ALL EQUIPMENT. THE USE OF DIELECTRIC UNIONS MUST BE INSTALLED IN AREAS WHERE JOINING OF DISSIMILAR METALS (ie CARBON STEEL TO COPPER OR BRONZE, ETC.). THIS IS TO FACILITATE PIPING REMOVAL AND REASSEMBLY FOR FUTURE MAINTENANCE WORK AND/OR PREVENT GALVANIC CORROSION.
5. CONTRACTOR SHALL PROPERLY BRACE, ANCHOR, AND SUPPORT ALL PIPING, VALVES ETC. UNLESS SHOWN OTHERWISE, ALL PIPE HANGERS AND SUPPORTS SHALL BE DESIGNED, MANUFACTURED AND INSTALLED PER MSS SP-58, MSS SP-69 AND MSS SP-89.
6. ALL ABOVEGROUND PIPING SHALL BE INSULATED AND JACKETED AS NOTED IN THE SPECIFICATIONS.
7. ALL PIPES THAT PASS THROUGH EXTERIOR WALLS SHALL BE SLEEVED AND MADE WEATHER TIGHT.
8. ALL PIPING AND VALVES MUST BE PROPERLY IDENTIFIED AND LABELED PER ANSI 13.1, ENTITLED "SCHEME FOR THE IDENTIFICATION OF PIPING SYSTEMS". ALL VALVES MUST BE IDENTIFIED AND TAGGED WITH WEATHERPROOF TAGS.
9. ALL PIPES OR TUBING WHICH PASS THROUGH RATED AND NON-RATED WALLS, FLOORS AND FOUNDATION WALLS, SHALL PASS THROUGH A SCHEDULE 40 CARBON STEEL PIPE SLEEVE. SLEEVES WHICH PASS THROUGH MASONRY SHALL BE GALVANIZED COATED. ALL SLEEVES SHALL BE INSTALLED FLUSH ON BOTH SIDES OF WALL PENETRATION.

   NON-RATED WALL: THE SLEEVE SHALL BE SIZED TO ALLOW FREE PASSAGE OF INSULATED AND NON-INSULATED PIPES AND TUBING.

   RATED WALL: PIPES WHICH PASS THROUGH FIRE-RATED WALLS & FLOOR SHALL USE THE APPROPRIATE CODE APPROVED, TESTED AND INSTALLATION METHOD OF SEALING WHILE MAINTAINING THE INTEGRITY OF THE WALL'S FIRE RATING(S).

   EXTENSION WALLS & FOUNDATION WALLS: PIPES WHICH PASS THROUGH EXTENSION WALLS OR FOUNDATION WALLS SHALL BE SEALED AND MADE WEATHER TIGHT.
10. INSULATE COLD AND HOT WATER PIPING WITH FIRE RETARDANT VAPOR BARRIER JACKET. PIPE INSULATION SHALL BE SEALED WITH A FIRE RESISTIVE ADHESIVE. SEE SPECIFICATIONS.

DRAWING SYMBOLS

- # — KEY NOTE SYMBOL
- # # — MULTIPLE KEY NOTES APPLYING TO THE SAME ITEM
- 2 / XXX — DETAIL NUMBER; DRAWING NUMBER WHERE DRAWN
- 1 / XXX — SECTION NUMBER; DRAWING NUMBER WHERE SHOWN
- 1-SF-1 — EQUIPMENT TAG: AHU THAT SERVES THE EQUIPMENT; EQUIPMENT ABBREVIATION (SUPPLY FAN); EQUIPMENT NUMBER
- POINT OF DISCONNECTION
- POINT OF CONNECTION – NEW TO EXISTING
- T — THERMOSTAT

100% FOR CONSTRUCTION

FULLY SPRINKLERED

Revisions	Date

Miller-Remick LLC
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MILLER-REMICK LLC
PROFESSIONAL ENGINEER
STATE OF NEW YORK — THOMAS L. CHAPMAN — 078145-1 — LICENSED PROFESSIONAL ENGINEER — 12/2/15

Reviewed: Facility Manager
Reviewed: Facility Director
Reviewed:
Reviewed:

Drawing Title: MECHANICAL COVER SHEET
Approved: Project Director

Project Title: RENOVATION FOR 6C
Building Number: NO. 1
Checked: JAS/PNL
Drawn: PNL
Location: VAMC SYRACUSE, NY

Date: 12-04-2015
Project No.: 528A7-14-719
DRAWING NO.: MG-001
Dwg. 25 Of 74

VA HEALTHCARE NETWORK UPSTATE NEW YORK
Department of Veterans Affairs

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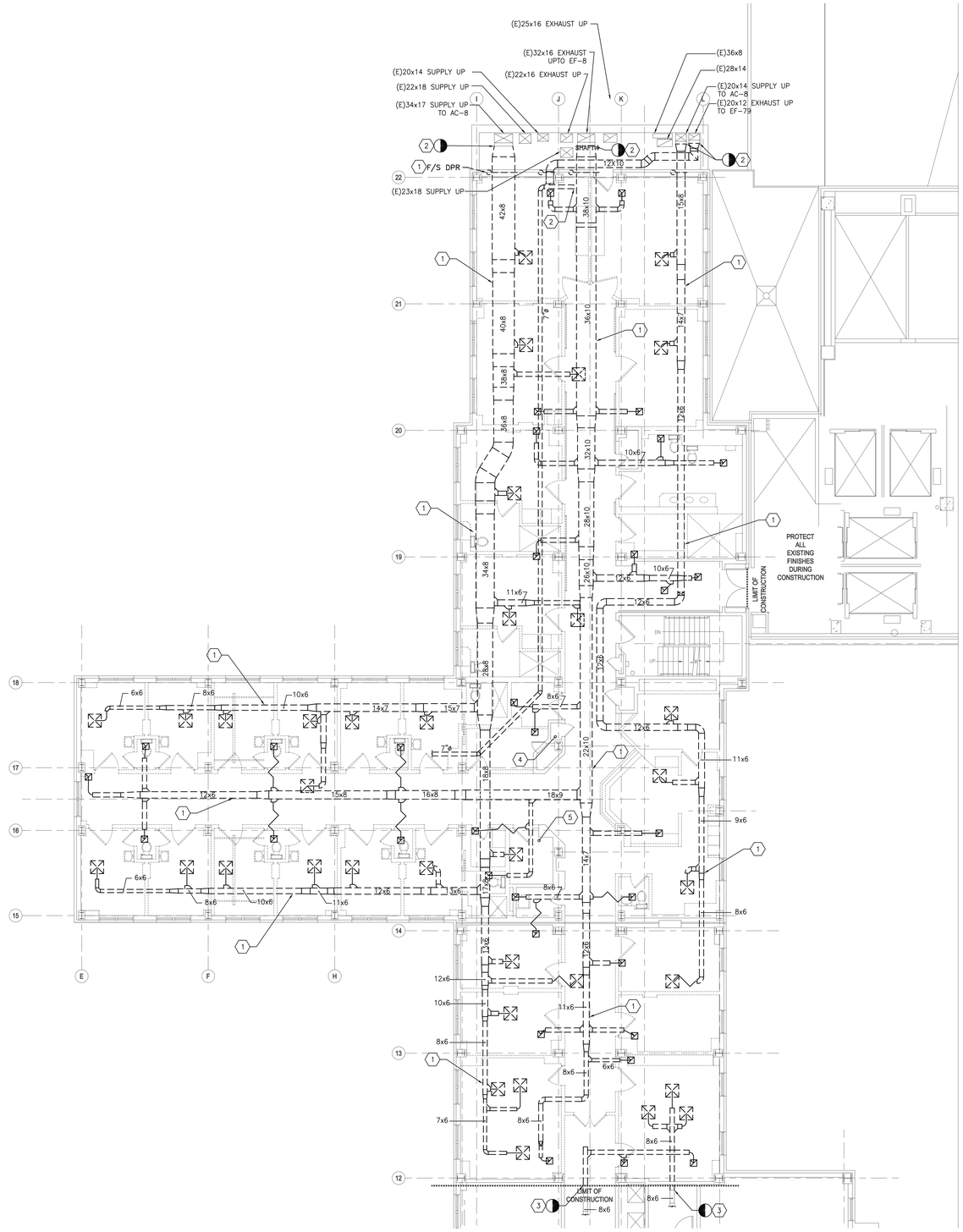
PLAN NORTH

ACTUAL NORTH



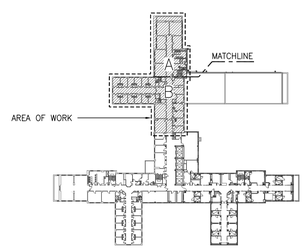
1 6TH FLOOR DUCTWORK DEMOLITION PLAN
SCALE: 1/8" = 1'-0"

GENERAL SHEET NOTES:

1. ROOMS NOT ASSOCIATED WITH THIS PROJECT BUT CONNECTED BY SERVICES MUST STAY ACTIVE DURING CONSTRUCTION. PROVIDE ALL NECESSARY TEMPORARY SERVICES, BYPASS DUCTWORK, BYPASS PIPING, DUCT OR PIPING CAPS, INSULATION, ETC. AS REQUIRED.
2. ALL EXISTING CONTROLS, VALVE ACTUATORS AND ASSOCIATED CONTROL COMPONENTS SHALL BE REMOVED AND RETURNED TO OWNER.
3. CONTRACTOR SHALL COORDINATE WITH INFECTION CONTROL AND PHASING PLANS.

SHEET KEYNOTES:

1. CONTRACTOR SHALL REMOVE EXISTING DUCT WORK, HANGERS, DIFFUSERS, CONTROLS, VAV BOXES AND ALL APPURTENANCES AS INDICATED. CUT AND CAP ANY EXISTING SERVICES TO REMAIN ACTIVE DURING CONSTRUCTION.
2. CONTRACTOR IS REQUIRED TO TAKE TRAVERSE READINGS AT AC-8/EF-8 AND EF-79 DUCT RISERS IN SHAFT 4, DETERMINE AIR QUANTITIES AND STATIC PRESSURE IN BRANCH DUCT BEING DEMOLISHED AND IN RISERS BELOW BRANCH DUCTS. TAKE ALL NECESSARY PRECAUTIONS WHEN WORKING ON THE ISOLATION ROOM EXHAUST SYSTEM (EF-79). PROVIDE THE READINGS TO THE COR AND ENGINEER PRIOR TO DEMOLITION WITH IN THE PROJECT SCOPE.
3. CONTRACTOR IS REQUIRED TO TAKE AIR BALANCING READINGS FOR THESE SYSTEMS. THE CONTRACTOR MAY USE A FLOW HOOD AT THIS LOCATION. PROVIDE THE READINGS TO THE COR AND ENGINEER PRIOR TO DEMOLITION. REBALANCE EXISTING FAN AND SYSTEM TO LOWER AIR FLOW. CAP EXISTING DUCT WORK TO REMAIN.



KEY PLAN
SCALE: NONE

100% FOR CONSTRUCTION

FULLY SPRINKLERED

Revisions	Date

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THOMAS J. REMICK
12-2-15
078145-1
LICENSED PROFESSIONAL ENGINEER

Reviewed: Facility Manager	
Reviewed: Facility Director	
Reviewed:	
Reviewed:	

Drawing Title: MECHANICAL 6TH FLOOR DUCTWORK DEMOLITION PLAN

Approved: Project Director

Project Title: **RENOVATION FOR 6C**

Building Number: NO. 1 | Checked: JAS | Drawn: VRR

Location: VAMC SYRACUSE, NY

Date: 12-04-2015

Project No.: **528A7-14-719**

DRAWING NO.: MD-101

Dwg. 26 Of 74

VA HEALTHCARE NETWORK UPSTATE NEW YORK

Department of Veterans Affairs

VA FORM 08-6231

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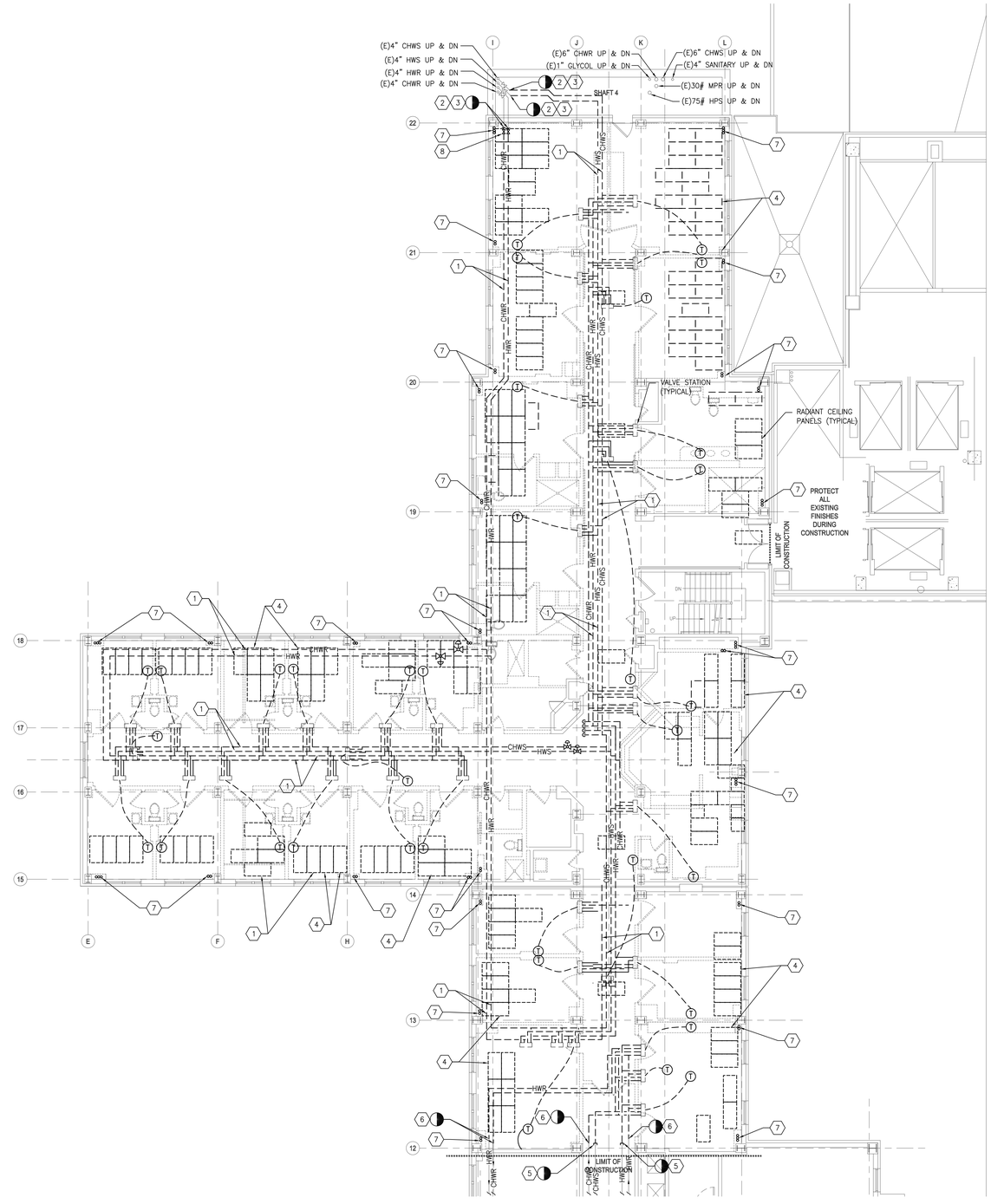
three inches = one foot
one and one half inches = one foot
one inch = one foot
three quarters inch = one foot
one half inch = one foot
three eighths inch = one foot
one quarter inch = one foot
one eighth inch = one foot

PLAN NORTH

ACTUAL NORTH



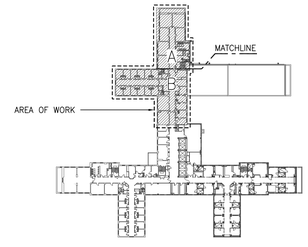
1 6TH FLOOR PIPING DEMOLITION PLAN
SCALE: 1/8" = 1'-0"

GENERAL SHEET NOTES:

1. ROOMS NOT ASSOCIATED WITH THIS PROJECT BUT CONNECTED BY SERVICES MUST STAY ACTIVE DURING CONSTRUCTION. PROVIDE ALL NECESSARY TEMPORARY SERVICES, BYPASS DUCTWORK, BYPASS PIPING, DUCT OR PIPING CAPS, INSULATION, ETC. AS REQUIRED.
2. ALL EXISTING CONTROLS, VALVE ACTUATORS, AND ASSOCIATED CONTROL COMPONENTS SHALL BE DEMOLISHED AND RETURNED TO OWNER.
3. CONTRACTOR SHALL COORDINATE WITH INFECTION CONTROL AND PHASING PLANS.

SHEET KEYNOTES:

1. CONTRACTOR SHALL REMOVE EXISTING PIPING, VALVING, HANGERS, VALVE STATIONS AND APPURTENANCES AS INDICATED. CUT AND CAP ANY EXISTING SERVICES TO REMAIN ACTIVE DURING CONSTRUCTION.
2. CONTRACTOR IS REQUIRED TO TAKE GPM READINGS AT THE MAINS COMING OUT OF SHAFT 4. PROVIDE THE READINGS TO THE COR AND ENGINEER PRIOR TO DEMOLITION WITH IN THE PROJECT SCOPE.
3. CONTRACTOR SHALL CUT AND CAP EXISTING HOT AND CHILLED WATER PIPE. MATCH EXISTING MATERIAL, PRESSURE CLASS, AND INSULATION.
4. REMOVE ALL RADIANT CEILING PANELS, ASSOCIATED PIPING, HANGERS, VALVING, CONTROLS, AND APPURTENANCES.
5. CUT AND CAP EXISTING CHILLED WATER AND HOT WATER SUPPLY.
6. CUT EXISTING CHILLED WATER AND HOT WATER RETURN. PREPARE PIPING FOR RE-ROUTING RETURN LINES.
7. DEMO AND REMOVE EXISTING STEAM AND CONDENSATE RISERS THIS LEVEL WHERE SHOWN. PATCH FLOOR OPENINGS AT TOP AND BOTTOM TO MATCH EXISTING CONSTRUCTION. COORDINATE REMOVAL OF RISERS WITH ASBESTOS ABATEMENT CONTRACTOR. REFER TO HAZARDOUS MATERIALS DRAWINGS FOR ADDITIONAL INFORMATION.



KEY PLAN
SCALE: NONE

100% FOR CONSTRUCTION
FULLY SPRINKLERED

Revisions	Date

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STATE OF NEW YORK THOMAS J. LICHTMAN 078145-1 LICENSED PROFESSIONAL ENGINEER 12/2/15

Reviewed: Facility Manager	
Reviewed: Facility Director	
Reviewed:	
Reviewed:	
Approved: Project Director	

Drawing Title: MECHANICAL 6TH FLOOR PIPING DEMOLITION PLAN

Project Title: **RENOVATION FOR 6C**

Building Number: NO. 1	Checked: JS	Drawn: VRR
Location: VAMC SYRACUSE, NY		

Date: 12-04-2015
Project No.: 528A7-14-719
DRAWING NO.: MD-102
Dwg. 27 Of 74

VA HEALTHCARE NETWORK UPSTATE NEW YORK
Department of Veterans Affairs

VA FORM 08-6231

three inches = one foot
one and one half inches = one foot
one inch = one foot
three quarters inch = one foot
one half inch = one foot
three eighths inch = one foot
one quarter inch = one foot
one eighth inch = one foot

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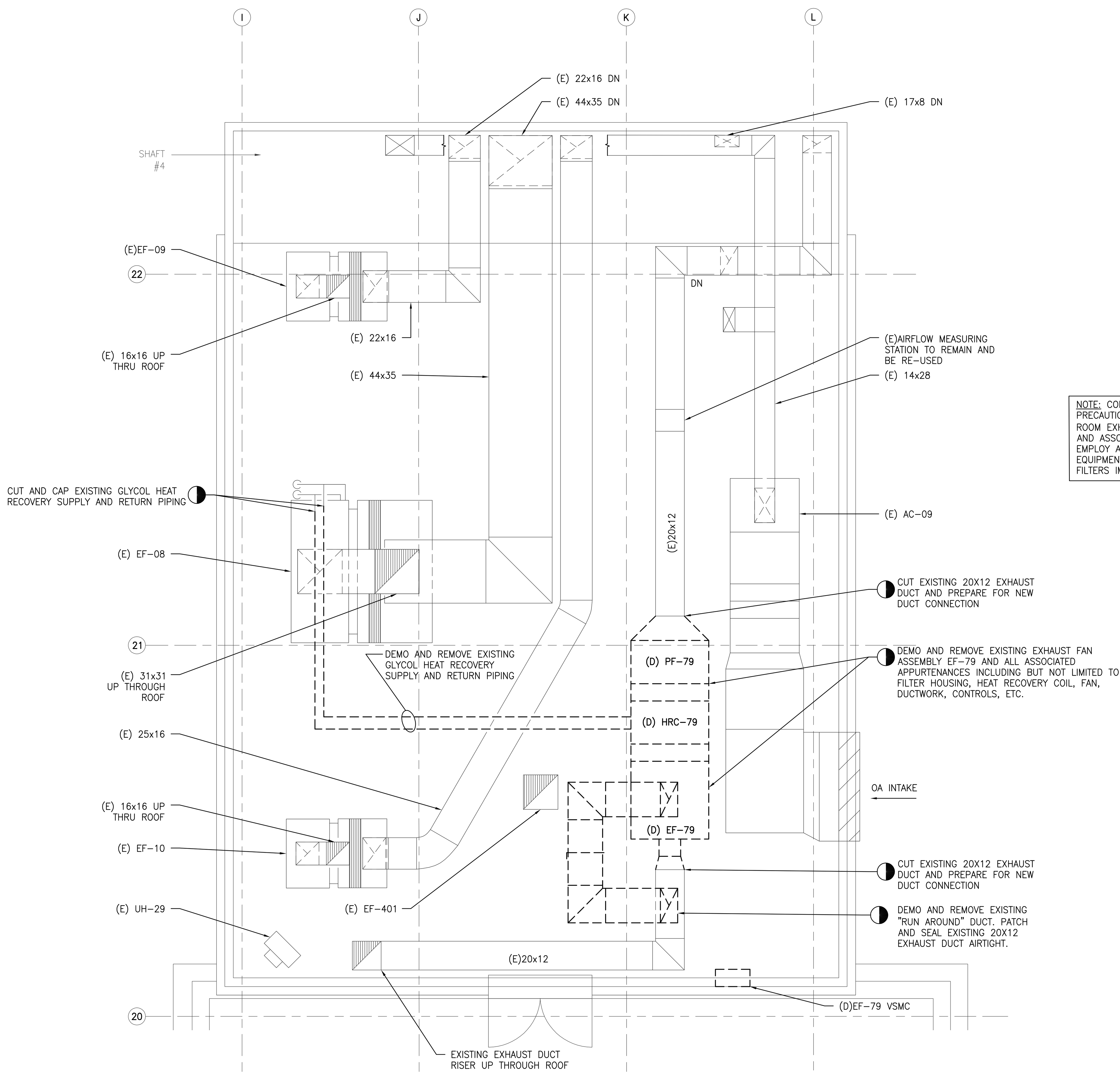
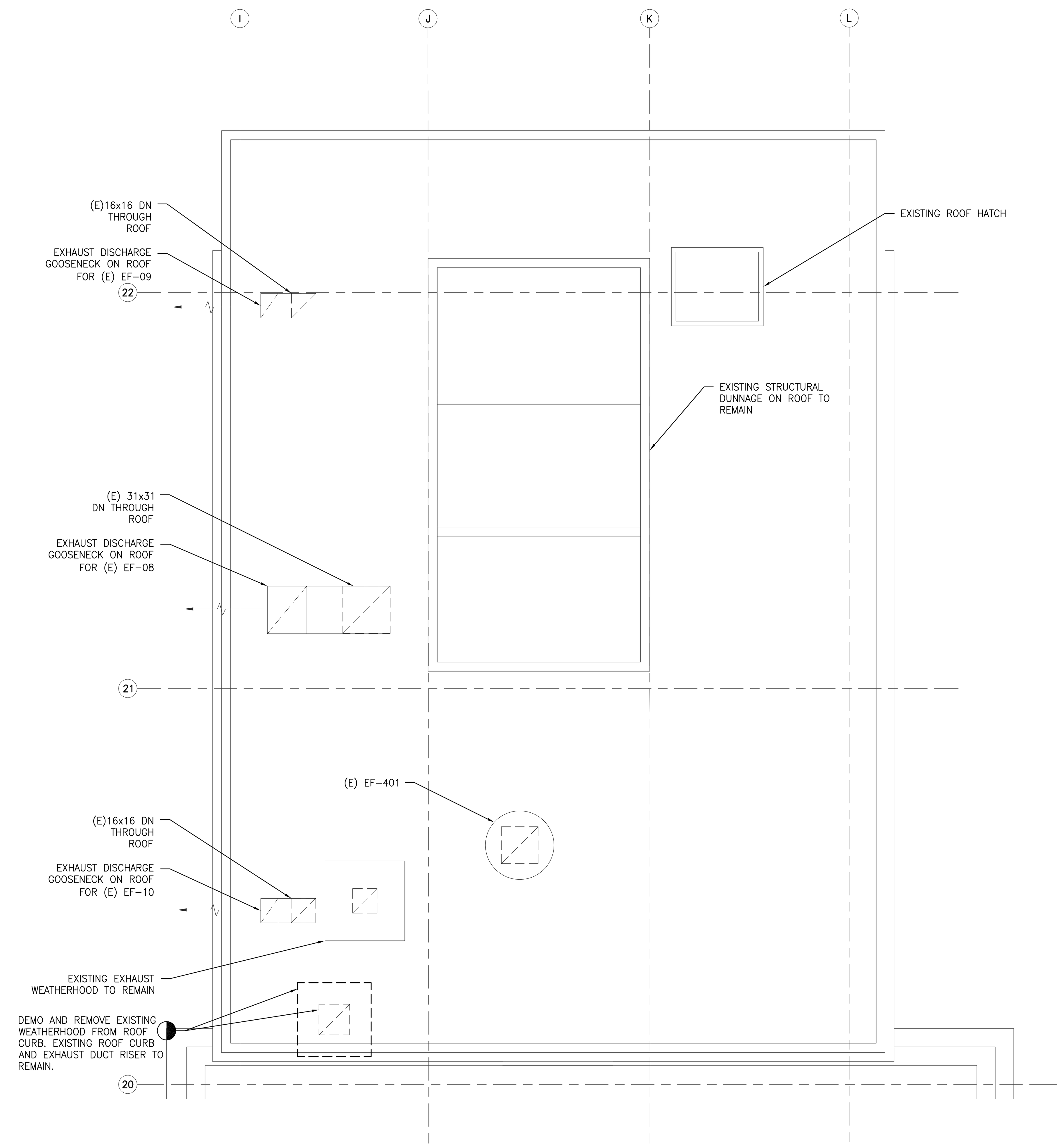
PLAN NORTH
ACTUAL NORTH

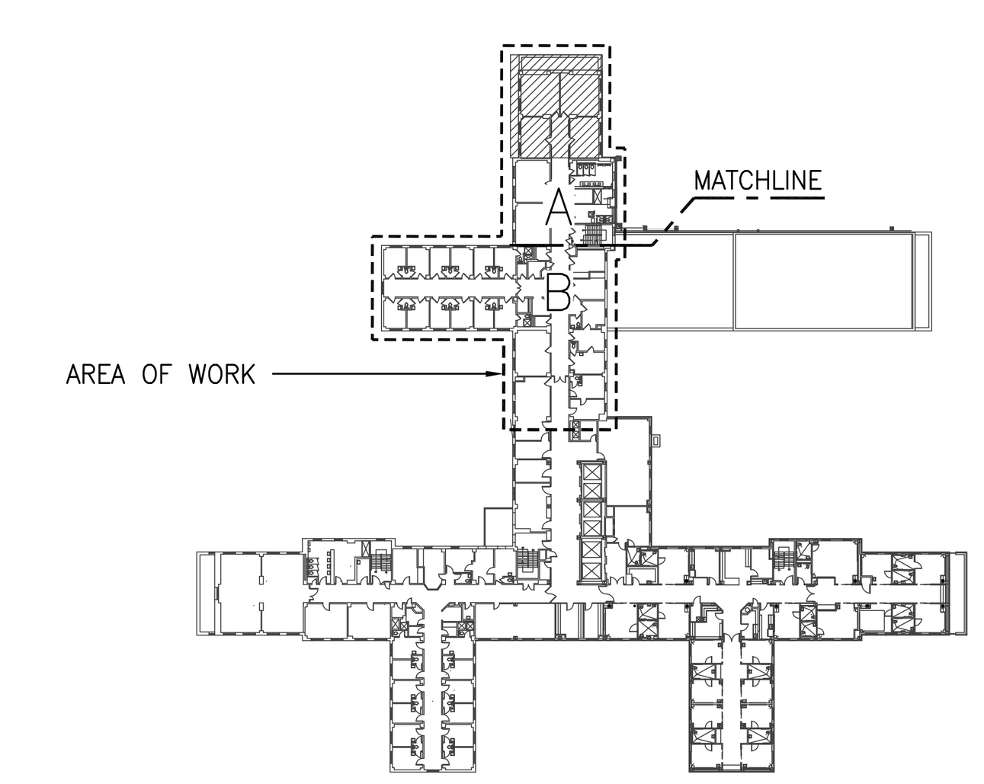


NOTE: CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS DURING DEMOLITION OF ISOLATION ROOM EXHAUST/FILTRATION UNIT EF-79/PF-79 AND ASSOCIATED DUCTWORK. EMPLOY ALL NECESSARY PERSONAL PROTECTION EQUIPMENT FOR AIRBORNE INFECTION. BAG DIRTY FILTERS IMMEDIATELY FOR PROPER DISPOSAL.

1 9TH FLOOR MECHANICAL EQUIPMENT ROOM DEMOLITION PLAN
SCALE: 1/4" = 1'-0"



2 MECHANICAL EQUIPMENT ROOM ROOF DEMOLITION PLAN
SCALE: 1/4" = 1'-0"



KEY PLAN
SCALE: NONE

100% FOR CONSTRUCTION
FULLY SPRINKLERED

Revisions	Date

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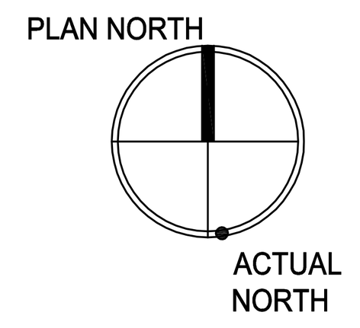
QPK Job Number:

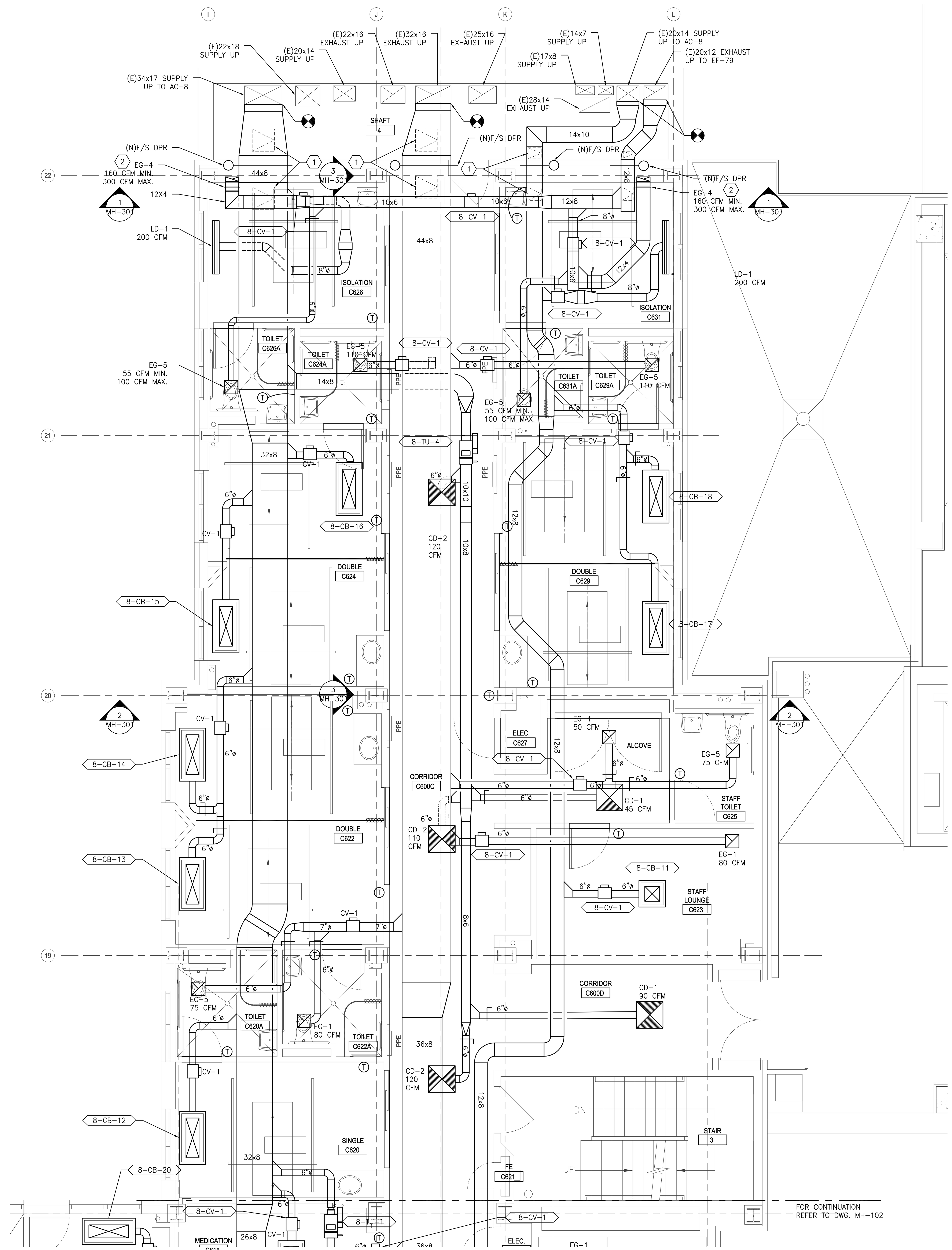
MILLER-REMICK LLC PROFESSIONAL ENGINEER
12/2/15

Reviewed: Facility Manager	
Reviewed: Facility Director	
Reviewed:	
Reviewed:	
Drawing Title	MECHANICAL 9TH FLOOR M.E.R. AND ROOF DEMOLITION PLAN
Approved: Project Director	
Project Title	RENOVATION FOR 6C
Building Number	NO. 1
Checked	JS
Drawn	VRR
Location	VAMC SYRACUSE, NY
Date	12-04-2015
Project No.	528A7-14-719
DRAWING NO.	MD-103
Dwg.	27 of 74

VA HEALTHCARE NETWORK UPSTATE NEW YORK
Department of Veterans Affairs

VA FORM 08-6231





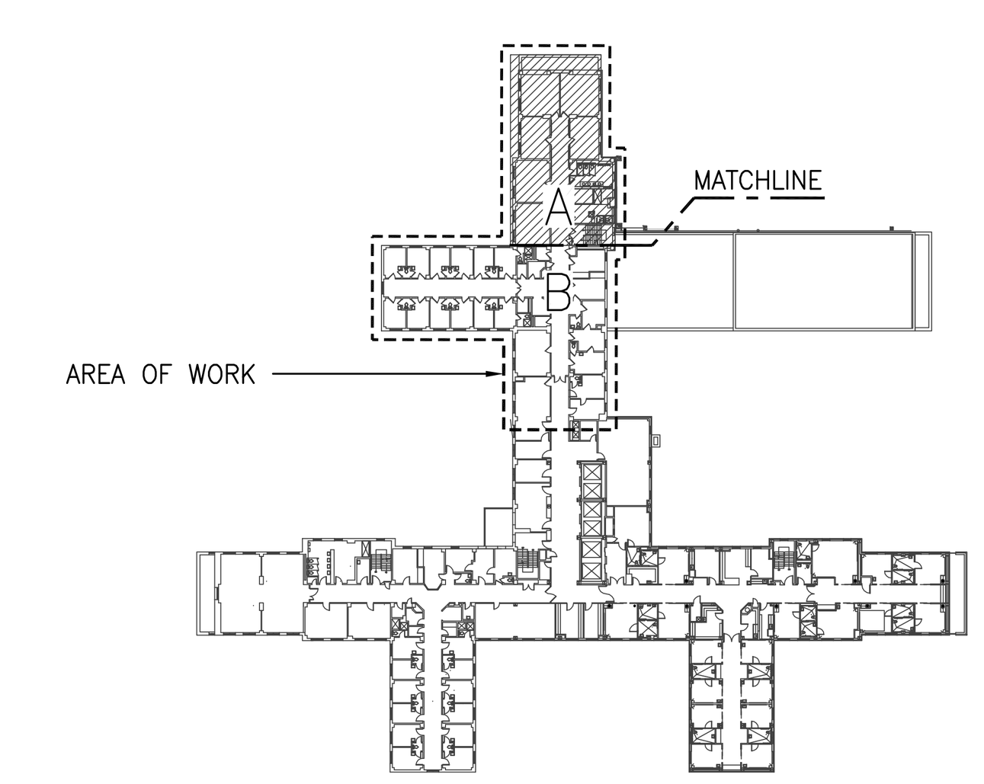
1 6TH FLOOR DUCTWORK PLAN
SCALE: 1/4" = 1'-0"

GENERAL SHEET NOTES:

1. ROOMS NOT ASSOCIATED WITH THIS PROJECT BUT CONNECTED BY SERVICES MUST STAY ACTIVE DURING CONSTRUCTION. PROVIDE ALL NECESSARY TEMPORARY SERVICES, BYPASS DUCTWORK, BYPASS PIPING, DUCT OR PIPING CAPS, INSULATION, ETC. AS REQUIRED.
2. CONTRACTOR SHALL COORDINATE WITH INFECTION CONTROL AND PHASING PLANS.TAKE ALL NECESSARY PRECAUTIONS WHEN WORKING ON THE ISOLATION ROOM EXHAUST SYSTEM (EF-79)
3. CONTRACTOR TO COORDINATE NEW MECHANICAL WORK WITH THE NEW CABLE TRAY, LIGHTING AND PATIENT LIFT.

SHEET KEYNOTES:

1. PROVIDE ACCESS PANELS ON BOTH SIDES OF THE FIRE/SMOKE DAMPER.
2. EG-4 IS TO BE 7" ABOVE FINISHED FLOOR REFERENCE MH-301 FOR ADDITIONAL INFORMATION.



KEY PLAN
SCALE: NONE

100% FOR CONSTRUCTION

FULLY SPRINKLERED

Revisions	Date

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QPK Job Number:

MILLER-REMICK LLC
PROFESSIONAL ENGINEER
STATE OF NEW YORK — THOMAS L. CHAPMAN — 078145-1 — LICENSED PROFESSIONAL ENGINEER

Reviewed: Facility Manager	
Reviewed: Facility Director	
Reviewed:	
Reviewed:	
Drawing Title	MECHANICAL 6TH FLOOR DUCTWORK PLAN PART A
Approved: Project Director	
Project Title	RENOVATION FOR 6C
Building Number	NO. 1
Checked	JS
Drawn	VRR
Location	VAMC SYRACUSE, NY
Date	12-04-2015
Project No.	528A7-14-719
DRAWING NO.	MH-101
Dwg.	29 Of 74

VA HEALTHCARE NETWORK UPSTATE NEW YORK
Department of Veterans Affairs

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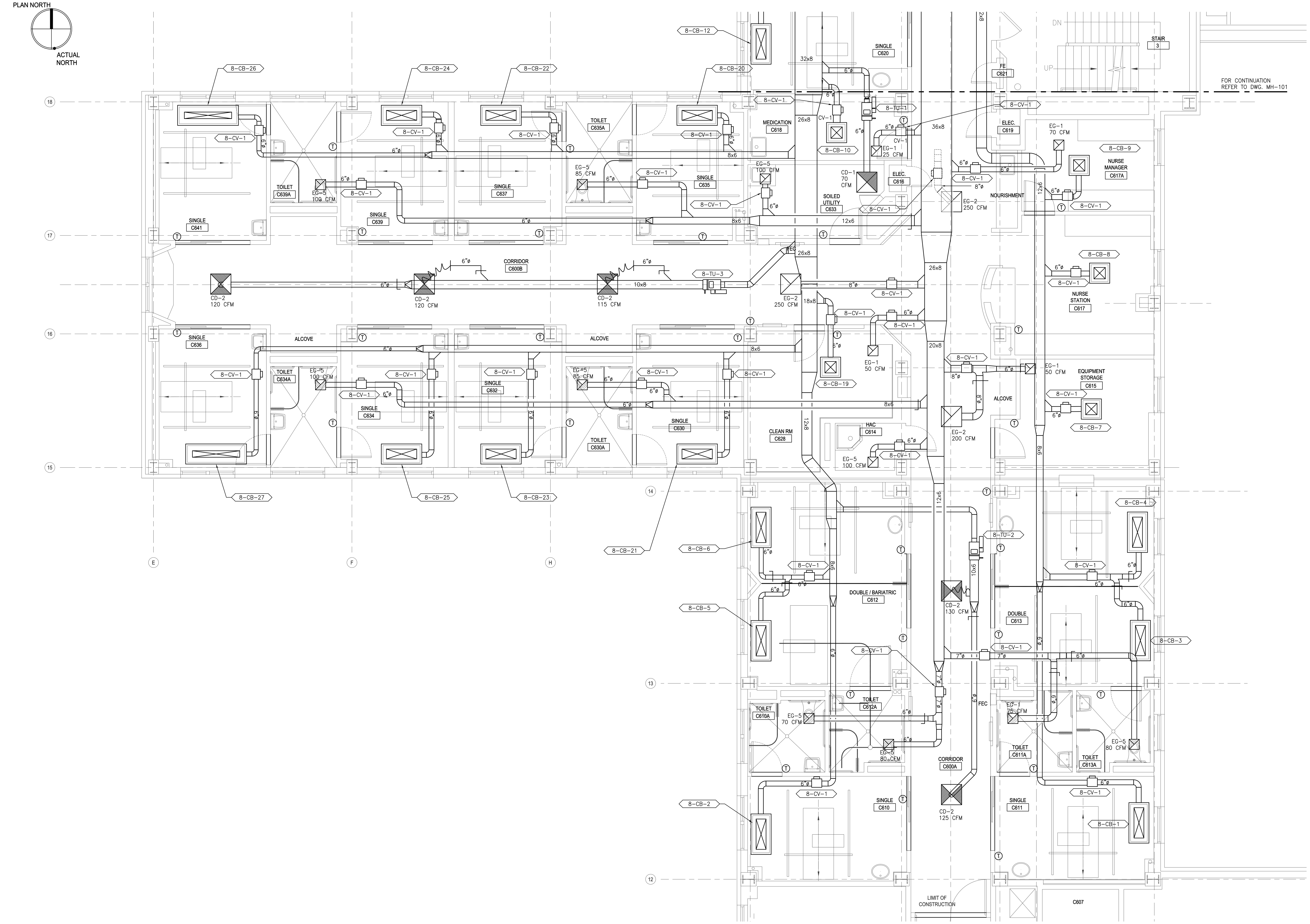
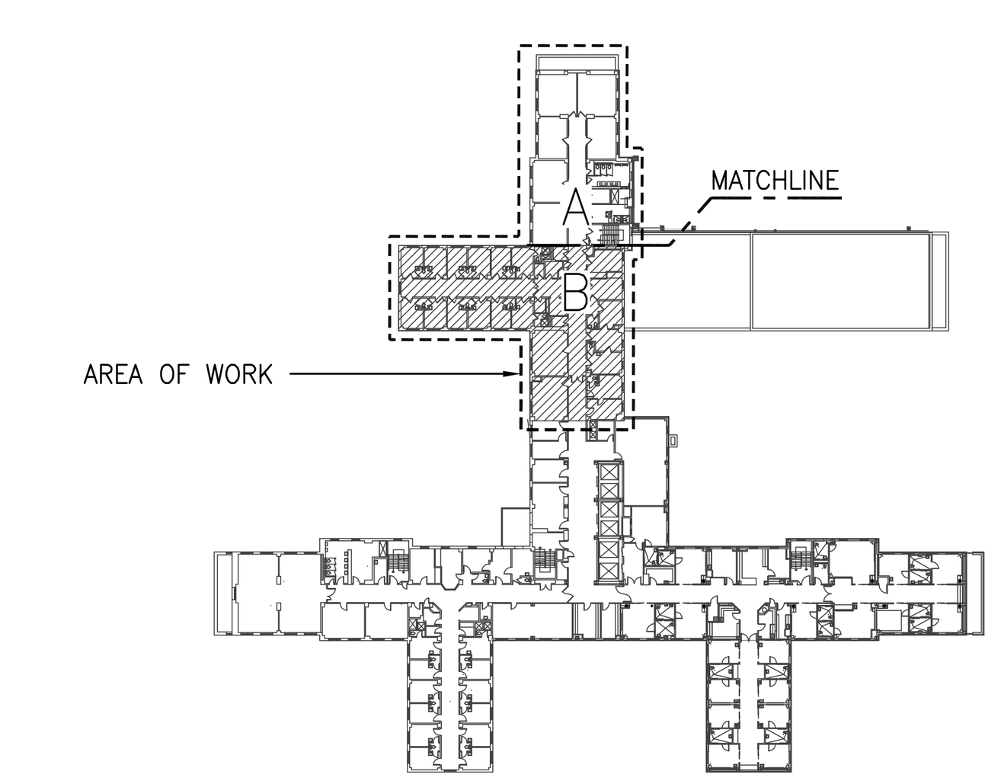


1 6TH FLOOR DUCTWORK PLAN
SCALE: 1/8" = 1'-0"

GENERAL SHEET NOTES:

1. ROOMS NOT ASSOCIATED WITH THIS PROJECT BUT CONNECTED BY SERVICES MUST STAY ACTIVE DURING CONSTRUCTION. PROVIDE ALL NECESSARY TEMPORARY SERVICES, BYPASS DUCTWORK, BYPASS PIPING, DUCT OR PIPING CAPS, INSULATION, ETC. AS REQUIRED.
2. ALL VALVE ACTUATORS AND ASSOCIATED CONTROL COMPONENTS SHALL BE TURNED OVER TO OWNER.
3. CONTRACTOR SHALL COORDINATE WITH INFECTION CONTROL AND PHASING PLANS.



KEY PLAN
SCALE: NONE

100% FOR CONSTRUCTION
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Revisions | Date

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QPK DESIGN
ARCHITECTURE
ENGINEERING
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MILLER-REMICK LLC
PROFESSIONAL ENGINEER

Reviewed: Facility Manager	Drawing Title: MECHANICAL 6TH FLOOR DUCTWORK PLAN PART B
Reviewed: Facility Director	
Reviewed:	Approved: Project Director
Reviewed:	

Project Title: RENOVATION FOR 6C
Building Number: NO. 1
Checked: JS
Drawn: VRR
Location: VAMC SYRACUSE, NY
Date: 12-04-2015
Project No. 528A7-14-719
DRAWING NO. MH-102
Dwg. 30 of 74

VA HEALTHCARE NETWORK UPSTATE NEW YORK
Department of Veterans Affairs

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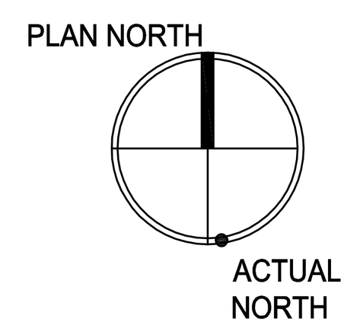
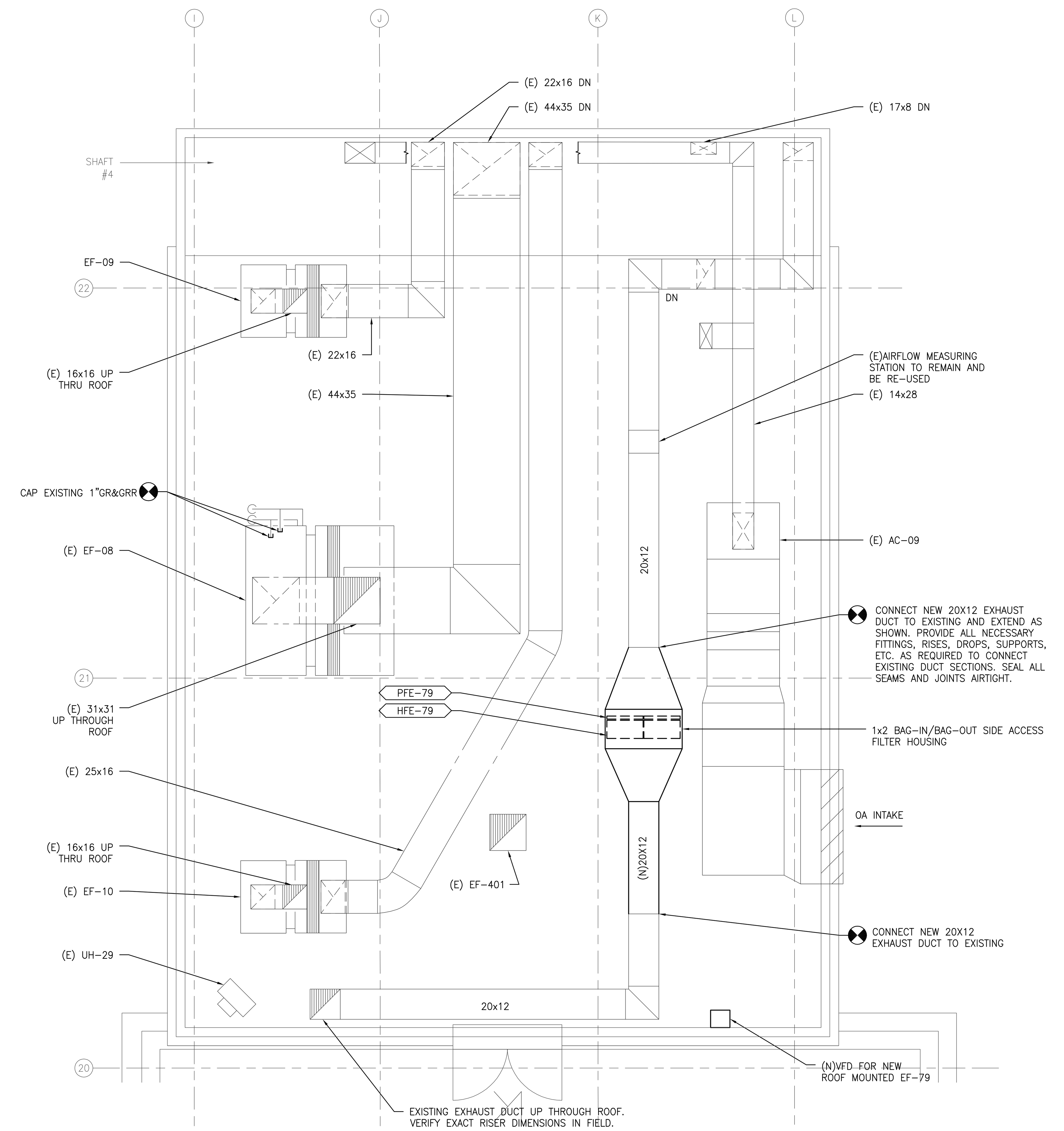
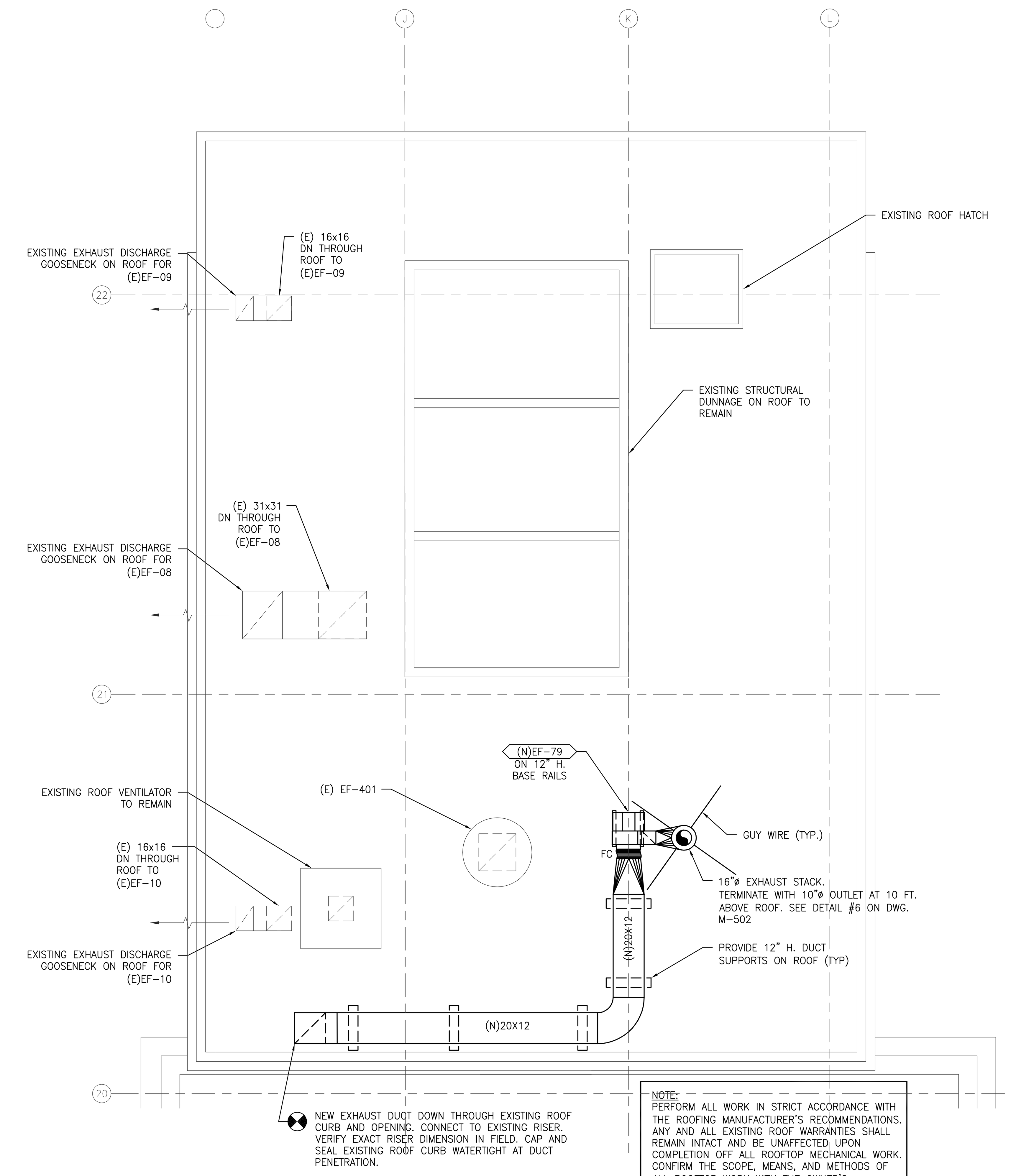


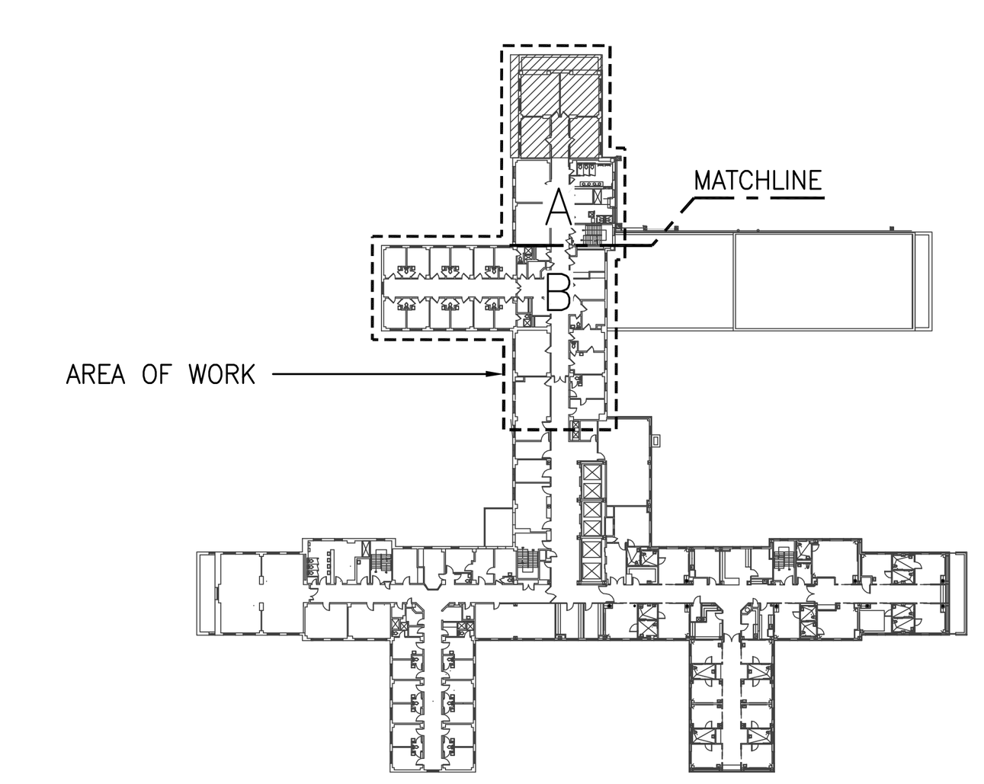


1 9TH FLOOR MECHANICAL EQUIPMENT ROOM PLAN
SCALE: 1/4" = 1'-0"



NOTE:
PERFORM ALL WORK IN STRICT ACCORDANCE WITH THE ROOFING MANUFACTURER'S RECOMMENDATIONS. ANY AND ALL EXISTING ROOF WARRANTIES SHALL REMAIN INTACT AND BE UNAFFECTED. UPON COMPLETION OFF ALL ROOFTOP MECHANICAL WORK. CONFIRM THE SCOPE, MEANS, AND METHODS OF ALL ROOFTOP WORK WITH THE OWNER'S REPRESENTATIVE PRIOR TO COMMENCING.

2 MECHANICAL EQUIPMENT ROOM ROOF PLAN
SCALE: 1/4" = 1'-0"



KEY PLAN
SCALE: NONE

100% FOR CONSTRUCTION
FULLY SPRINKLERED

Revisions	Date

Miller-Remick LLC
M.E.P. & Structural Engineering
A Service Disabled Veteran Owned Small Business
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CHERRY HILL, NEW JERSEY 08034
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FAX: (856)429-5002

SDVOSB

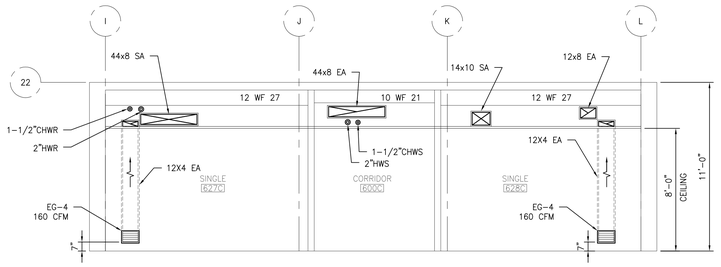
QPK DESIGN
ARCHITECTURE ENGINEERING SITE & PLANNING
QPK Job Number:

MILLER-REMICK LLC
PROFESSIONAL ENGINEER

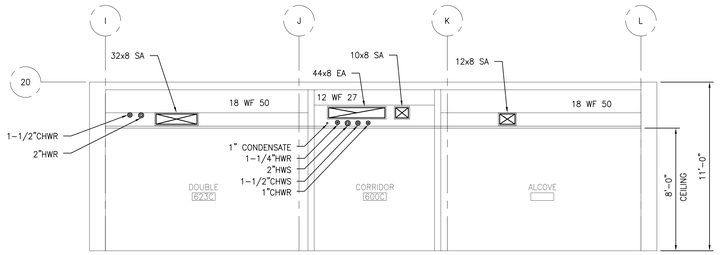
Reviewed: Facility Manager	Drawing Title: MECHANICAL 9TH FLOOR M.E.R. AND ROOF PLAN	Project Title: RENOVATION FOR 6C	Date: 12-04-2015	
Reviewed: Facility Director			Project No.: 528A7-14-719	
Reviewed:	Approved: Project Director	Building Number: NO. 1 · Checked: JS · Drawn: VRR	DRAWING NO. MH-103	
Reviewed:		Location: VAMC SYRACUSE, NY	Dwg. 31 of 74	

VA HEALTHCARE NETWORK UPSTATE NEW YORK
Department of Veterans Affairs

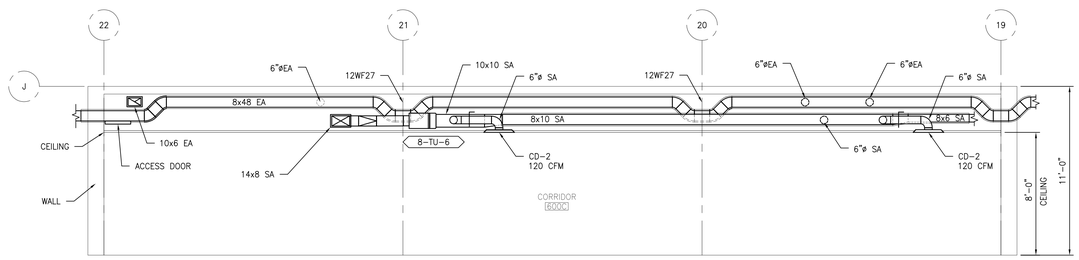
VA FORM 08-6231



1 PARTIAL SIXTH FLOOR SECTION 1-1 NEW DUCTWORK
SCALE: 1/4" = 1'-0"



2 PARTIAL SIXTH FLOOR SECTION 2-2 NEW DUCTWORK
SCALE: 1/4" = 1'-0"



3 PARTIAL SIXTH FLOOR SECTION 3-3 NEW DUCTWORK
SCALE: 1/4" = 1'-0"

GENERAL SHEET NOTES:

1. ROOMS NOT ASSOCIATED WITH THIS PROJECT BUT CONNECTED BY SERVICES MUST STAY ACTIVE DURING CONSTRUCTION. PROVIDE ALL NECESSARY TEMPORARY SERVICES, BYPASS DUCTWORK, BYPASS PIPING, DUCT OR PIPING CAPS, INSULATION, ETC. AS REQUIRED.
2. CONTRACTOR SHALL COORDINATE WITH INFECTION CONTROL AND PHASING PLANS.
3. CONTRACTOR TO COORDINATE NEW MECHANICAL WORK WITH THE NEW CABLE TRAY.
4. REFERENCE DRAWING MH-101 FOR ADDITIONAL INFORMATION.

100% FOR CONSTRUCTION
FULLY SPRINKLERED

Revisions	Date

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MILLER-REMICK LLC
PROFESSIONAL ENGINEER
STATE OF NEW YORK
JAMES L. CHRISTMAN
078145
12/2/15
LICENSED PROFESSIONAL ENGINEER

Reviewed: Facility Manager	
Reviewed: Facility Director	
Reviewed:	
Reviewed:	
Approved: Project Director	

Drawing Title: MECHANICAL DUCTWORK SECTIONS

Project Title: **RENOVATION FOR 6C**

Building Number	Checked	Drawn
NO. 1	JS	VRR

Location: VAMC SYRACUSE, NY

Date: 12-04-2015
Project No.: **528A7-14-719**
DRAWING NO.: MH-301
Dwg. 32 Of 74

VA HEALTHCARE NETWORK UPSTATE NEW YORK
Department of Veterans Affairs

VA FORM 08-6231

three inches = one foot
one and one half inches = one foot
one inch = one foot
three quarters inch = one foot
one half inch = one foot
three eighths inch = one foot
one quarter inch = one foot
one eighth inch = one foot
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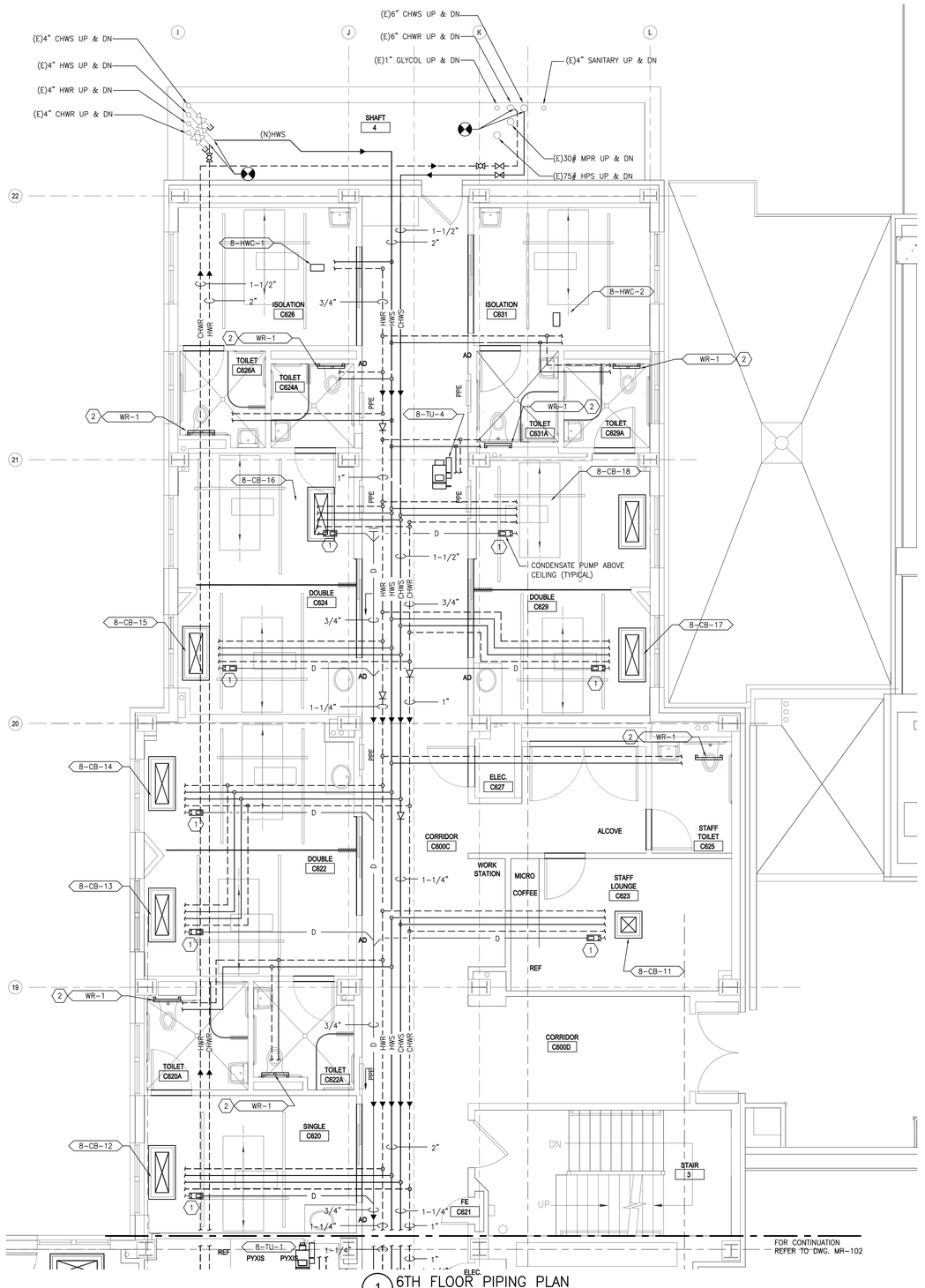
PLAN NORTH

ACTUAL NORTH



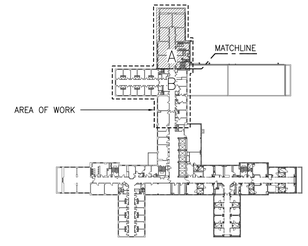
1 6TH FLOOR PIPING PLAN
SCALE: 1/4" = 1'-0"

GENERAL SHEET NOTES:

1. CONTRACTOR SHALL ROUTE DISCHARGE OF CONDENSATE PUMP TO NEAREST INDIRECT DRAIN LOCATED IN ROOM B607. SEE SCHEDULE AND DETAIL FOR FURTHER CLARIFICATION.
2. ALL BRANCH PIPING TO BE 3/4" UNLESS NOTED OTHERWISE. PIPE SIZE BASED ON 2" AND UNDER IS COPPER PIPING, OVER 2" IS SCHEDULE 40.

SHEET KEYNOTES:

1. CONTRACTOR TO PROVIDE LITTLE GIANT CONDENSATE OR APPROVED EQUAL CONDENSATE PUMP MODEL VCCC-20ULS 115V/1.5 AMP WITH 45 GPH AT 10' HEAD.
2. COORDINATE PIPING CONNECTIONS WITH ACCESS PANEL LOCATIONS. REFER TO 10/M-501 & ARCHITECTURAL ELEVATIONS.
3. CONDENSATE PIPING DROP TO DISCHARGE INTO SERVICE SINK.



KEY PLAN
SCALE: NONE

100% FOR CONSTRUCTION

FULLY SPRINKLERED

Revisions	Date

Miller-Remick LLC
M.E.P. & Structural Engineering
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STATE OF NEW YORK
THOMAS J. CHAPMAN
079145-1
LICENSED PROFESSIONAL ENGINEER
12/2/15

Reviewed: Facility Manager	
Reviewed: Facility Director	
Reviewed:	
Reviewed:	
Approved: Project Director	

Drawing Title
MECHANICAL
6TH FLOOR PIPING PLAN
PART A

Project Title
RENOVATION FOR 6C

Building Number: NO. 1
Checked: JS
Drawn: PNL
Location: VAMC SYRACUSE, NY

Date: 12-04-2015
Project No.: 528A7-14-719
DRAWING NO.: MP-101
Dwg. 33 Of 74

VA HEALTHCARE NETWORK UPSTATE NEW YORK
Department of Veterans Affairs

VA FORM 08-6231

three inches = one foot
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one inch = one foot
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one eighth inch = one foot

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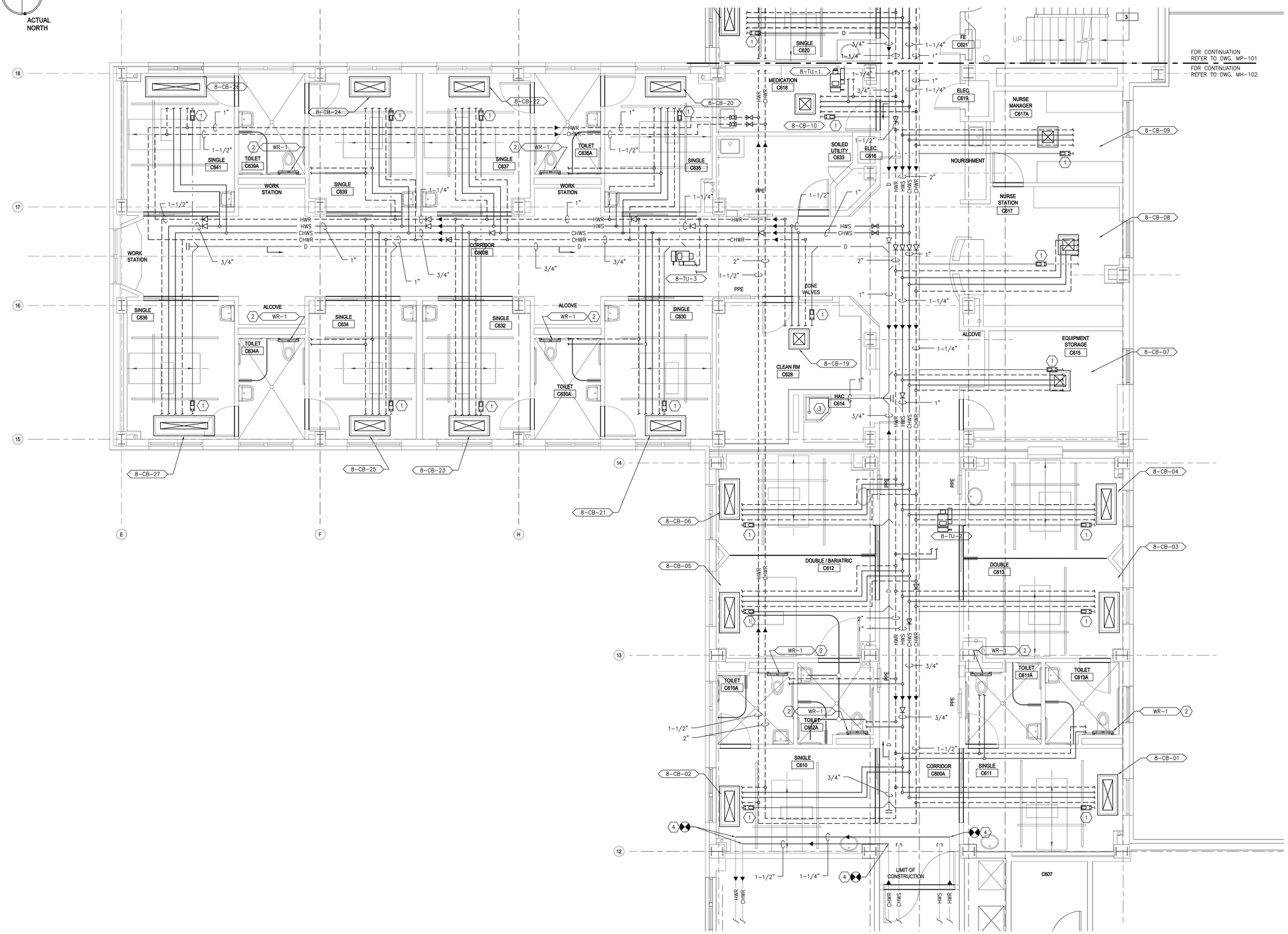
PLAN NORTH

ACTUAL NORTH



1 6TH FLOOR PIPING PLAN
SCALE: 1/4" = 1'-0"

GENERAL SHEET NOTES:

1. CONTRACTOR SHALL ROUTE DISCHARGE OF CONDENSATE PUMP TO NEAREST INDIRECT DRAIN LOCATED IN ROOM B607. SEE SCHEDULE AND DETAIL FOR FURTHER CLARIFICATION.
2. ALL BRANCH PIPING TO BE 3/4" UNLESS NOTED OTHERWISE. PIPE SIZE BASED ON 2" AND UNDER IS COPPER PIPING, OVER 2" IS SCHEDULE 40.

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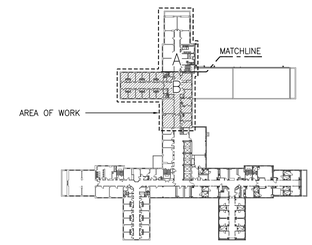
1. CONTRACTOR TO PROVIDE LITTLE GIANT CONDENSATE OR APPROVED EQUAL CONDENSATE PUMP MODEL VCCC-20ULS 115V/1.5 AMP WITH 45 GPH AT 10' HEAD.
2. COORDINATE PIPING CONNECTIONS WITH ACCESS PANEL LOCATIONS. REFER TO 10/M-501 & ARCHITECTURAL ELEVATIONS.
3. CONDENSATE PIPING DROP TO DISCHARGE INTO SERVICE SINK.
4. CONNECT NEW HOT AND CHILLED WATER RETURN LINES AND RE-ROUTE RETURN WATER AS SHOWN.



KEY PLAN
SCALE: NONE

100% FOR CONSTRUCTION

FULLY SPRINKLERED

Revisions	Date

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078145-1
LICENSED PROFESSIONAL ENGINEER
12/2/15

Reviewed: Facility Manager	
Reviewed: Facility Director	
Reviewed:	
Reviewed:	
Approved: Project Director	
Drawing Title	MECHANICAL 6TH FLOOR PIPING PLAN PART B
Project Title	**RENOVATION FOR 6C**
Building Number	NO. 1
Checked	JS
Drawn	PNL
Location	VAMC SYRACUSE, NY
Date	12-04-2015
Project No.	528A7-14-719
DRAWING NO.	MP-102
Dwg.	34 Of 74

VA HEALTHCARE NETWORK UPSTATE NEW YORK

Department of Veterans Affairs

VA FORM 08-6231

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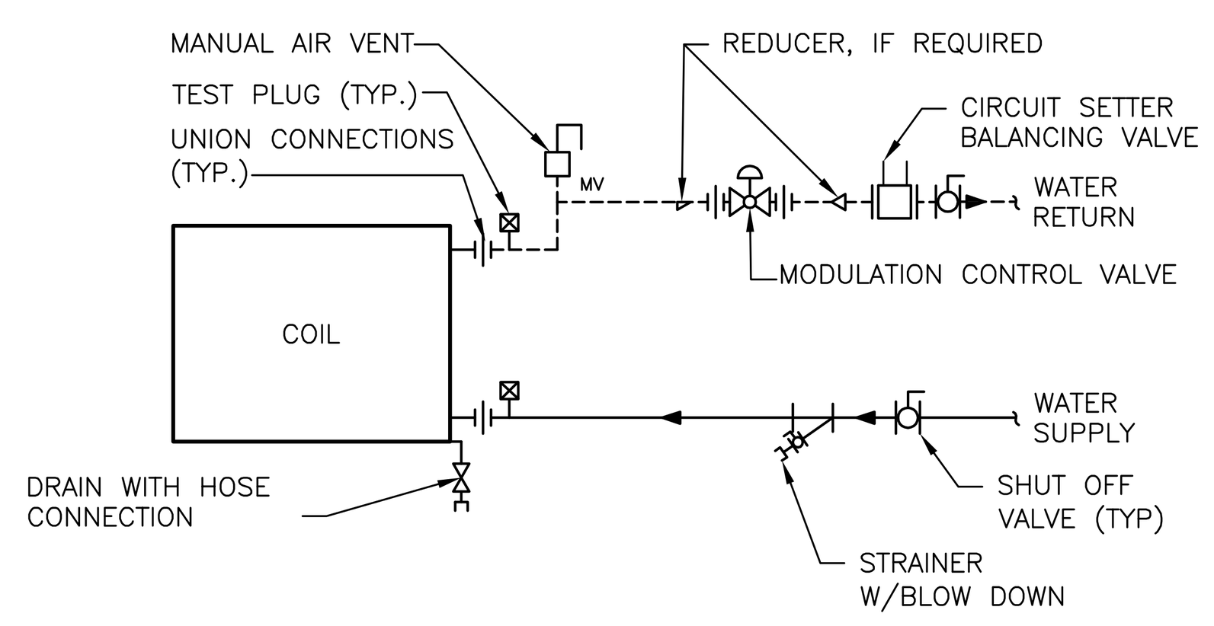
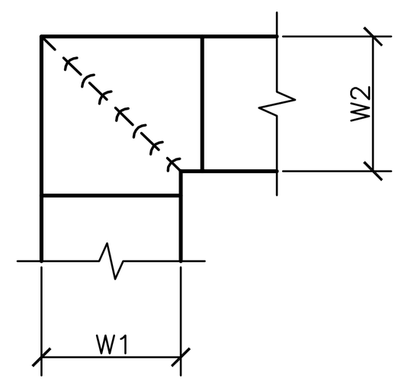
one inch = one foot | one half inch = one foot | three quarters inch = one foot | one and one half inches = one foot | three inches = one foot | three eighths inch = one foot | one quarter inch = one foot | one eighth inch = one foot



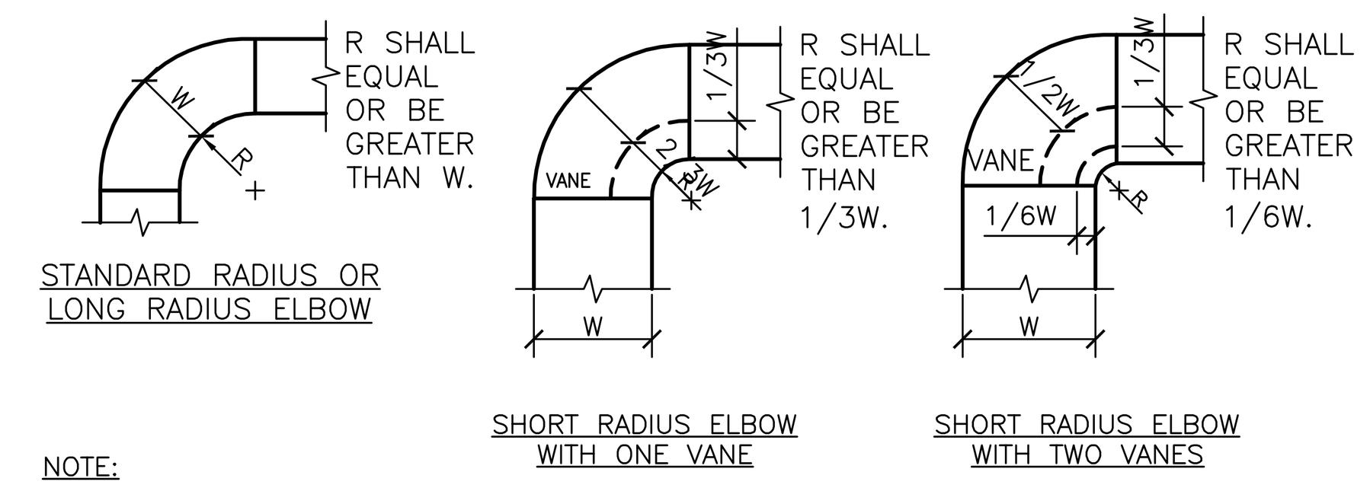
1 TERMINAL UNIT WATER COILS – PIPING CONNECTIONS
NTS



NOTE:

1. ALL VANE ELBOWS SHALL BE CONSTRUCTED AND INSTALLED AS DETAILED BY SMACNA.
2. WHEN W1 DOES NOT EQUAL W2, VANE SHALL BE SINGLE THICKNESS VANE TYPE REGARDLESS OF W DIMENSION.
3. ALL SINGLE THICKNESS VANES SHALL HAVE A 2" [50mm] RADIUS, 1 1/2" [40mm] MAXIMUM SPACE BETWEEN VANES AND A 3/4" [20mm] TRAILING EDGE.
4. WHEN W EQUALS W2 AND W1 IS GREATER THAN 20" [500mm] VANES SHALL BE DOUBLE VANE TYPE.

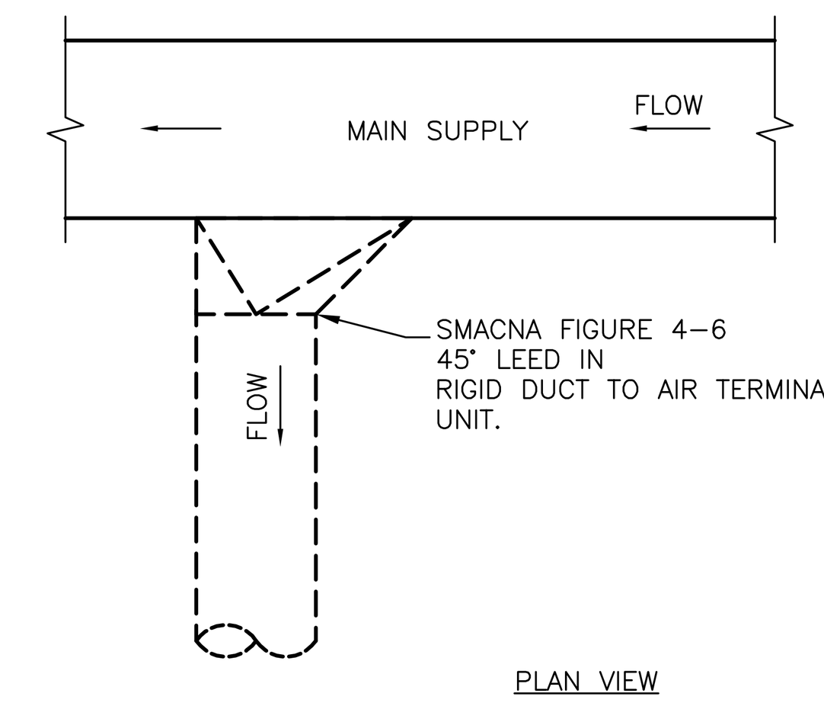
2 DUCTWORK SQUARE VANE ELBOWS
NTS



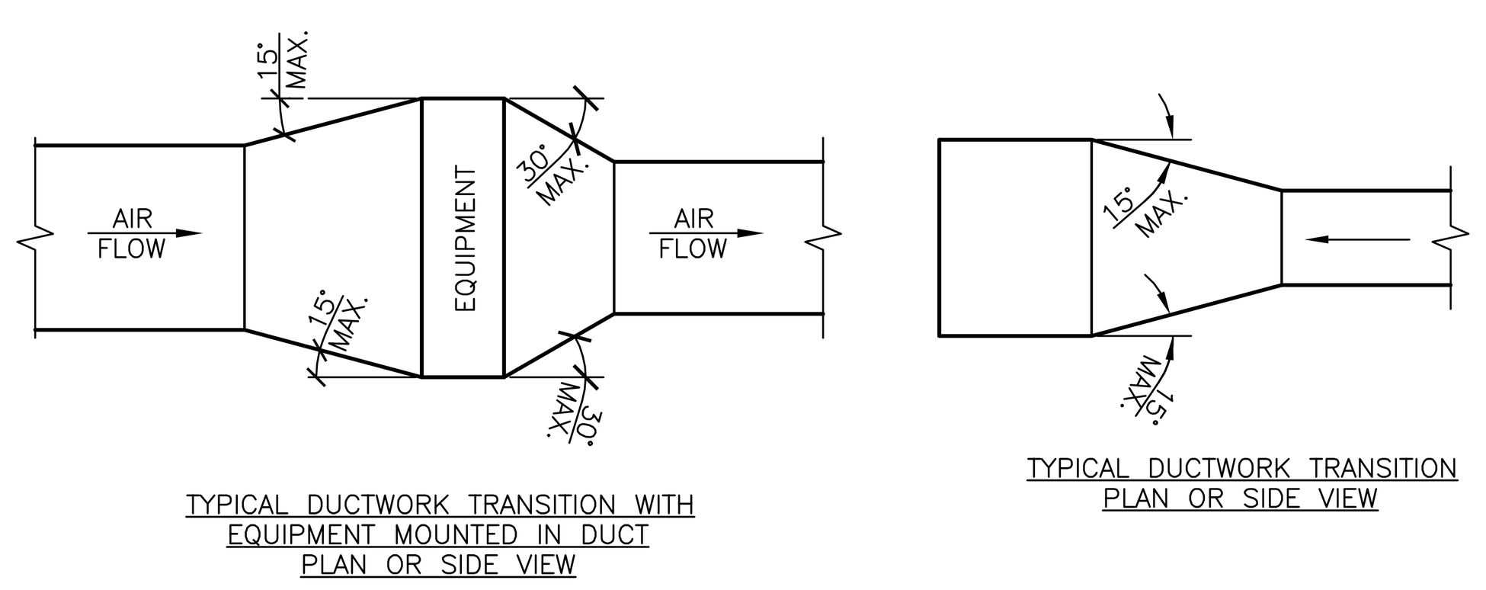
NOTE:

1. THE INTERIOR SURFACE OF ALL RADIUS ELBOWS SHALL BE MADE ROUND.
2. ALL STANDARD RADIUS ELBOWS CAN BE SUBSTITUTED WITH SHORT RADIUS ELBOWS. ALL SHORT RADIUS ELBOWS SHALL HAVE VANES. VANES SHALL BE CONSTRUCTED, SUPPORTED AND FASTENED AS RECOMMENDED BY SMACNA.

3 DUCTWORK RADIUS ELBOWS
NTS

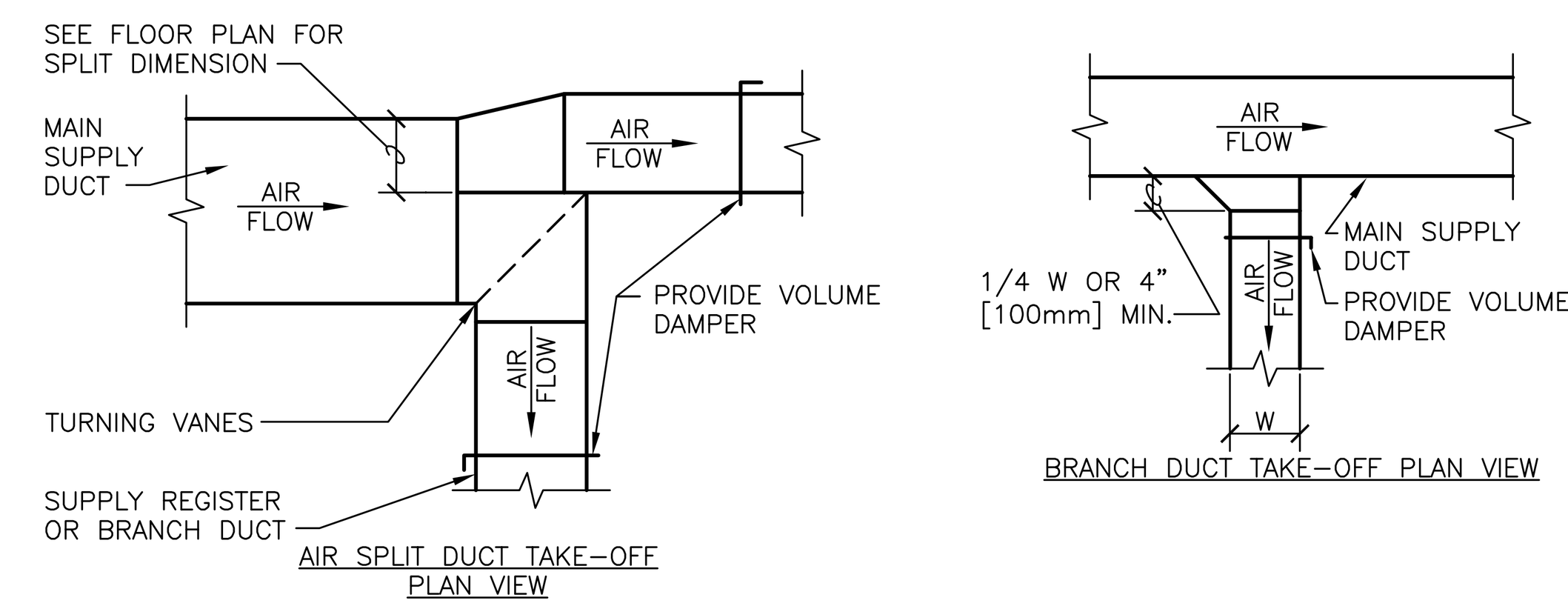


4 ALTERNATE SUPPLY DUCT TAKEOFF – AIR TERMINAL UNITS
NTS



NOTE:
UNLESS OTHERWISE INDICATED ON PLANS, MAXIMUM ANGLES SHOWN SHALL APPLY.

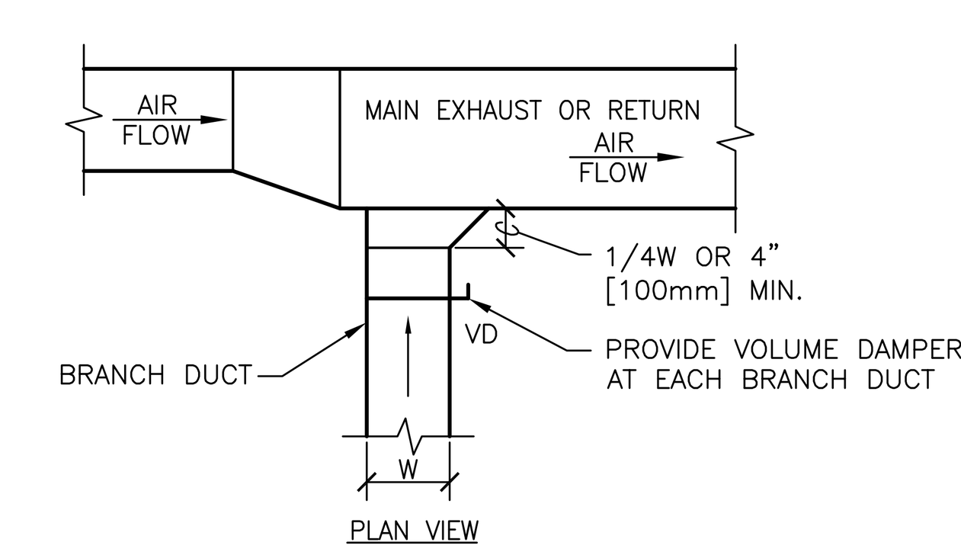
5 DUCTWORK TRANSITIONS (WITH EQUIPMENT MOUNTED IN DUCT)
NTS



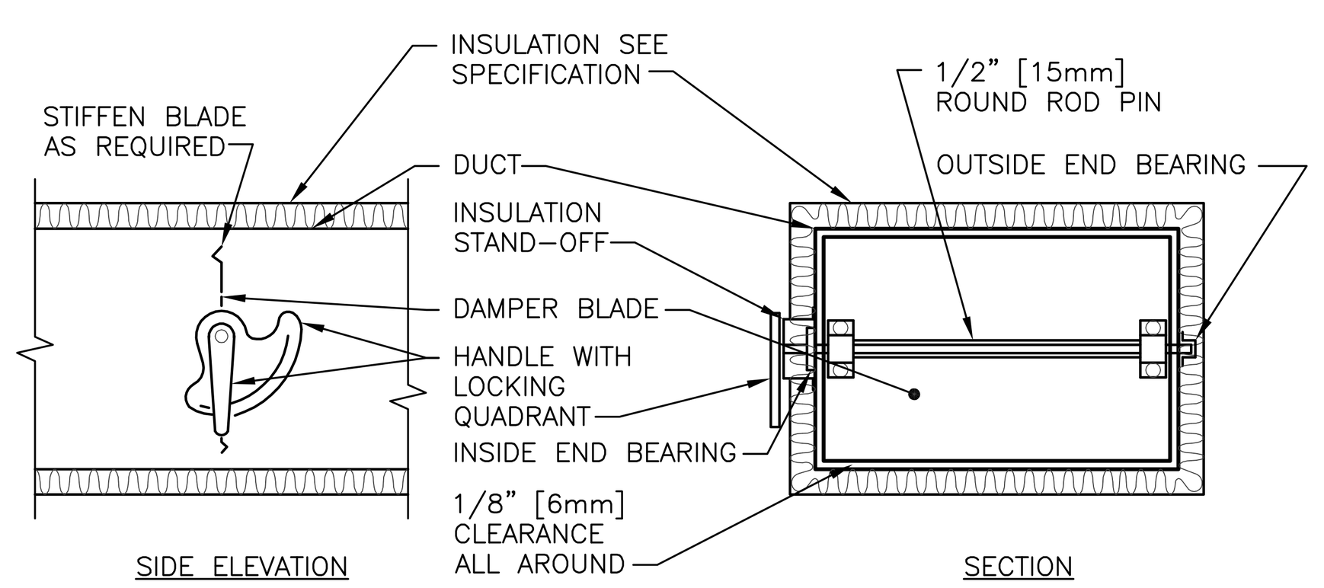
DESIGNER'S NOTES:

1. THE BRANCH DUCT TAKE–OFF MAY BE USED FOR UP TO 15% OF THE MAIN DUCT CFM ANYTIME AND UP TO 40% WHEN THE MAIN DUCT VELOCITY IS 1000 FPM [5.1 M/S] OR LESS. THE AIR SPLIT DUCT TAKE–OFF SHALL BE USED IN ALL OTHER CASES AND MAY BE USED AT ANYTIME.
2. SHOW ALL VOLUME DAMPERS ON FLOOR PLANS.

6 SUPPLY DUCTWORK TAKE–OFFS
NTS



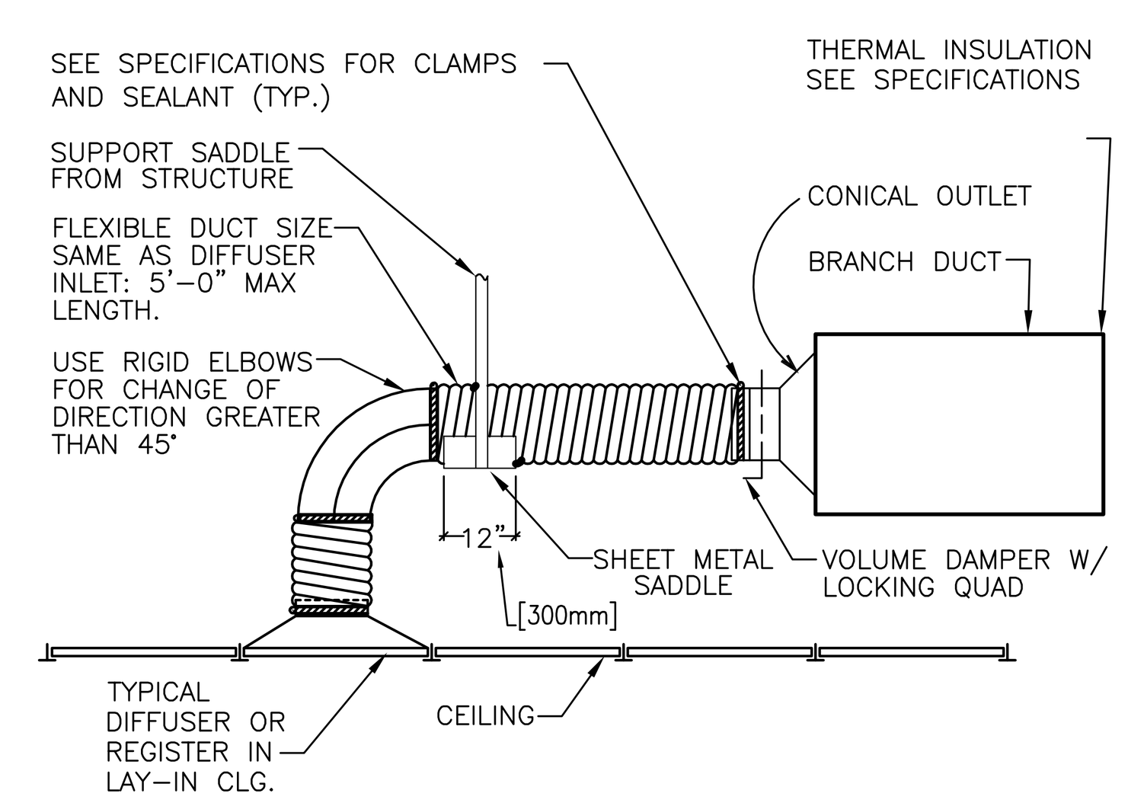
7 EXHAUST OR RETURN BRANCH DUCTWORK
NTS



NOTE:

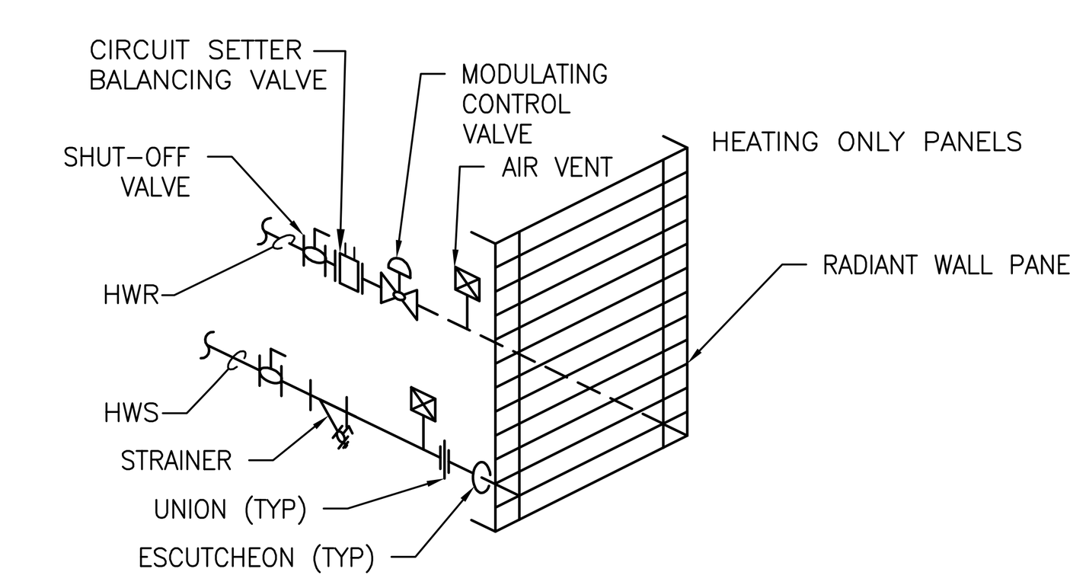
1. DELETE INSULATION STAND–OFF ON DUCTWORK WITHOUT EXTERIOR INSULATION.
2. DETAIL SHOWS SINGLE BLADE DAMPER. DAMPER INSTALLATION SHALL BE SIMILAR FOR MULTI–BLADE DAMPERS & ROUND DAMPERS.

8 VOLUME DAMPER DETAIL
NTS



NOTE:
THE USE OF FLEXIBLE AIR DUCT CONNECTORS ARE NOT PERMITTED FOR THE DEDICATED AHU SERVING THE SURGICAL SUITE.

9 FLEXIBLE AIR DUCT CONNECTOR
NTS



NOTES:

1. PROVIDE DIELECTRIC FITTING AS REQUIRED.
2. PROVIDE ALL PLUGS, DRAINS, AIR VENT FITTINGS, ETC. AS OFFERED BY THE MANUFACTURER FOR A COMPLETE INSTALLATION.
3. PROVIDE CHROME ESCUTCHEONS AT WALL PENETRATIONS BY PIPING. ALL EXPOSED PIPE, TUBING, AND FITTINGS SHALL BE CHROME PLATED.

10 HYDRONIC RADIANT WALL PANELS – PIPING CONNECTIONS
NTS

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FULLY SPRINKLERED

Revisions	Date

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QPK DESIGN
ARCHITECTURE
ENGINEERING
SITE & PLANNING
QPK Job Number:

MILLER-REMICK LLC
PROFESSIONAL ENGINEER

Reviewed: Facility Manager	
Reviewed: Facility Director	
Reviewed:	
Reviewed:	

Drawing Title: MECHANICAL DETAILS	Project Title: RENOVATION FOR 6C			Date: 12-04-2015
Approved: Project Director	Building Number: NO. 1	Checked: QFE/AF	Drawn: VRR	Project No. 528A7-14-719
	Location: VAMC SYRACUSE, NY			DRAWING NO. MG-501
				Dwg. 35 of 74

VA HEALTHCARE NETWORK UPSTATE NEW YORK
Department of Veterans Affairs

VA FORM 08-6231

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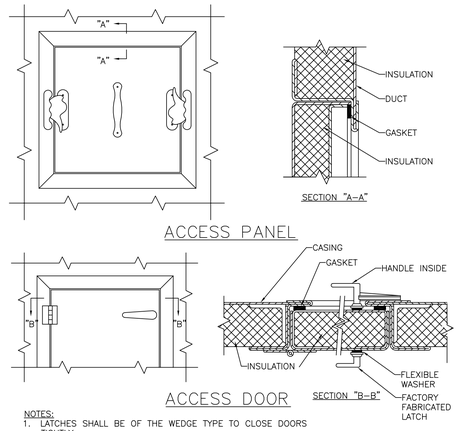
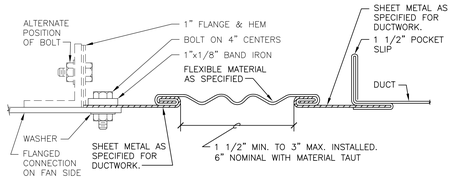
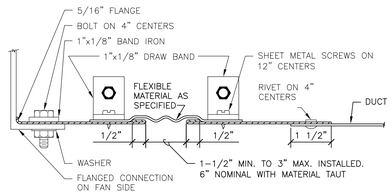


NOTES:
1. LATCHES SHALL BE OF THE WEDGE TYPE TO CLOSE DOORS TIGHTLY.
2. HINGES ON THE ACCESS DOORS SHALL HAVE NON–CORROSIVE PINS.
3. SEE SMACNA 2005, FIGURE 9–15

1 DUCT ACCESS PANEL AND DOOR DETAIL
NTS

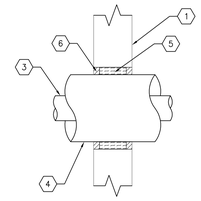


RECTANGULAR FLEXIBLE CONNECTION



ROUND FLEXIBLE CONNECTION

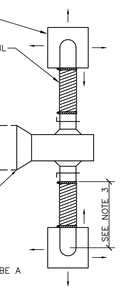
2 FLEXIBLE DUCT CONNECTIONS
NTS



NOTE:
1. WALL ASSEMBLY – MINIMUM 6 IN THICK LIGHTWEIGHT OR NORMAL WEIGHT CONCRETE OR MASONRY WALL. THE ANNULAR SPACE RANGE IS 0 INCH (POINT CONTACT) TO 1–5/8 INCH.
2. STEEL WIRE MESH (NOT SHOWN) – FOR CMU WALLS ONLY, CYLINDRICAL SLEEVE FABRICATED FROM NO. 8 STEEL WIRE MESH AND HAVING A MINIMUM 1 INCH LAP ALONG THE LONGITUDINAL SEAM. CENTER SLEEVE WITHIN THE OPENING.
3. METALLIC PIPE – MAXIMUM NOMINAL 10 INCH DIAMETER OR HEAVER STEEL PIPE OR CAST IRON PIPE OR MAXIMUM 4 INCH NOMINAL DIAMETER COPPER PIPE OR TUBING.
4. PIPE INSULATION – NOMINAL 2 INCH THICK (OR THINNER) FIBERGLASS OR MINERAL WOOL PIPE INSULATION. THE T RATING IS 2HR. FOR 1–1/2 INCH FIBERGLASS INSULATION AND 1–1/2HR FOR 2 INCH THICK FIBERGLASS INSULATION.
5. FORMING MATERIAL – TIGHTLY PACK 4PCF MINERAL WOOL BATT INSULATION TO FILL THE ANNULAR SPACE BETWEEN THE STEEL WIRE MESH SLEEVE AND THE INSULATED PIPE. RECESS 1/2 INCH FROM BOTH SURFACES OF THE WALL.
6. SEALANT – APPLY OVER THE FORMING MATERIAL TO A MINIMUM 1/2 INCH DEPTH, FLUSH WITH BOTH SURFACES OF THE WALL AT AREAS OF POINT CONTACT, APPLY A 1/4 INCH BEAD AT THE INTERFACE BETWEEN THE PIPE AND THE WALL.

NOTE:
UL SYSTEM W–J–5048

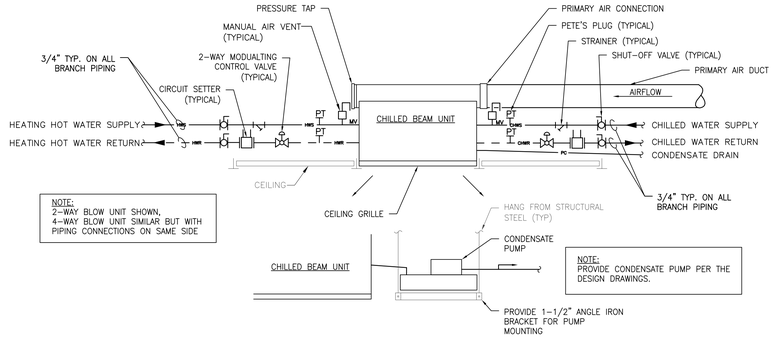
3 RATED WALL PENETRATION – INSULATED PIPE
NTS



NOTE:
1. RIGID STRAIGHT TERMINAL UNIT INLET LENGTH SHALL BE A MINIMUM OF 3 TIMES THE DIAMETER OF INLET
2. A BRANCH DUCT SERVING AN INDIVIDUAL BOX MAY BE THE SAME SIZE AS THE BOX INLET, PROVIDED THE EQUIVALENT LENGTH OF THE BRANCH DUCT, AS SHOWN, DOES NOT EXCEED 10 FEET (3 METERS). FOR LONGER LENGTHS, INCREASE THE DUCT SIZE AND PROVIDE A DUCT TRANSITION TO MAINTAIN THE DUCT STATIC PRESSURE DROP AT OR BELOW 0.2"/100'.
3. FLEXIBLE AIR DUCT CONNECTORS, WHEN USED FROM TERMINAL UNIT SUPPLY AIR DUCT TO DIFFUSER, SHALL NOT EXCEED 5'–0". USE RIGID ELBOWS FOR CHANGE OF DIRECTION GREATER THAN 45°.
4. COMPONENT ARRANGEMENT MAY VARY BY MANUFACTURER. PROVIDE INSULATION W/VAPOR BARRIER FOR CONNECTING DUCT SECTIONS.
5. USE OF THE FLEXIBLE AIR DUCT CONNECTORS ARE NOT PERMITTED FOR THE DEDICATED AHU SERVING THE SURGICAL SUITE.

DESIGNER'S NOTE: 1.INDICATE SOUND ATTENUATOR AS REQUIRED BY ACOUSTICAL ANALYSIS

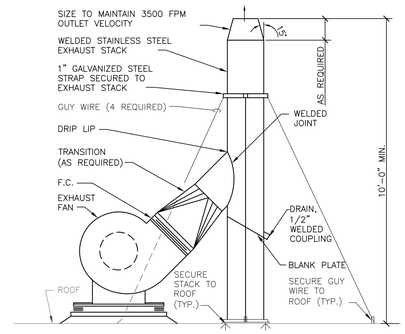
4 DUCT CONNECTIONS – AIR TERMINAL UNITS
NTS



NOTE:
2–WAY BLOW UNIT SHOWN, 4–WAY BLOW UNIT SIMILAR BUT WITH PIPING CONNECTIONS ON SAME SIDE

NOTE:
PROVIDE CONDENSATE PUMP PER THE DESIGN DRAWINGS.

5 CHILLED BEAM CONNECTION DETAIL
NTS



6 EXHAUST STACK DETAIL
NTS

100% FOR CONSTRUCTION
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Revisions	Date

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078145-1
LICENSED PROFESSIONAL ENGINEER

Reviewed: Facility Manager	
Reviewed: Facility Director	
Reviewed:	
Reviewed:	
Approved: Project Director	

Drawing Title: MECHANICAL DETAILS

Project Title: **RENOVATION FOR 6C**

Location: VAMC SYRACUSE, NY

Building Number	Checked	Drawn
NO. 1	QFE/AF	VRR

Date: 12-04-2015
Project No.: 528A7-14-719
DRAWING NO.: MG–502
Dwg. 36 Of 74

VA HEALTHCARE NETWORK UPSTATE NEW YORK
Department of Veterans Affairs

VA FORM 08-6231

three inches = one foot
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VARIABLE AIR VOLUME TERMINAL UNIT SCHEDULE

Model	Tag ID	Unit Size	Transducer Type	Max (Primary CFM)	Min (Primary CFM)	Min Oper PD (in.wg)	Reheat(CFM)	Capacity (MBH)	EAT °F	LAT °F	Fluid Flow(GPM)	EWT °F	LWT °F	Fluid PD (ft.wg)	Rows
SDV5	TU-1	4		70	50	0.02	50	2.6	60	106.1	0.5	160	149.6	0.15	1
SDV5	TU-2	7		255	130	0.06	130	5.1	55	90.1	0.5	160	139.3	0.21	1
SDV5	TU-3	8		355	200	0.08	200	6.5	55	84.2	0.6	160	137.9	0.27	1
SDV5	TU-4	8		485	300	0.14	300	8.1	55	79.1	0.7	160	136.5	0.35	1

Footnotes:
1) NC's are derived from sound power levels obtained in accordance with ASHRAE Standard 130-2008 and AHRI Standard 880-2011, which include duct end reflection corrections.
2) Sound power performance resulting in dashes (--) are below significance as outlined by the AHRI880-2011 standard.
3) NC values are calculated based on procedures outlined in AHRI Standard 885-2008, "A Procedure for Estimating Occupied Space Sound Levels in the Application of Air Terminals and Air Outlets."
4) Sound power levels are given in decibels (dB).
5) Airflow is given in cubic feet per minute (cfm).
6) Minimum operating pressure is the minimum static pressure required to operate the terminal unit assembly at maximum primary flow with a wide open damper.
7) Air pressure drop is given in inches water gauge (in. w.g.), and water pressure drop is given in feet of water gauge (ft. w.g.).
8) Water coil performance is rated and certified in accordance with the latest edition of AHRI Standard 410.
9) Provide discharge air temperature sensor (DAT) downstream of all Reheat coils or coordinate with ATC Contractor. See Details 3 and 4 on drawing MG-603

AIR FLOW CONTROL DEVICE SCHEDULE (CV)

TAG	NECK SIZE	MIN CFM	MAX CFM	BASIS OF DESIGN
CV-1	6	30	250	ACCUVALVE

NOTES:
1. CONTRACTOR TO INSTALL PER THE MANUFACTURER.
2. CONTRACTOR IS RESPONSIBLE FOR TRANSITIONING FROM THE CONTROL DEVISE TO THE DUCT WORK.

FLAT WALL RADIATION SCHEDULE (WR)

MARK	AREA AND/OR ROOM SERVED	ACTIVE PANEL SIZE WxH	HEATING				BASIS OF DESIGN (OR APPROVED EQUAL)	REMARKS
			HEATING CAPACITY	EWT	LWT	HOT WATER FLOWRATE		
		IN	BTUH	°F	°F	GPM		
WR-1	SEE DRAWINGS MP-101 AND MP-102 FOR LOCATIONS AND QUANTITIES	24X26	1,870	160	140	0.4	RUNTAL OMNIPANELTW9	

NOTES
1. CONTRACTOR TO INSTALL PER THE MANUFACTURERS RECOMMENDATIONS.
2. CONTRACTOR TO PROVIDE CHROME PIPE COVERS FOR EXPOSED PIPING.
3. PROVIDE CHROME ANGLE CONTROL VALVE.

CHILLED BEAM UNIT SCHEDULE (CB)

Room Description				Induction Beam/Chilled Beam Units					Air Side						Cooling													Heating									Sound & Throw	
Unit ID	Room Name	Area (Sq. Ft.)	People	2 or 4 Pipe	Pressure (inch of water)	Total Heating GPM (All Beams)	Cooling GPM (All Beams)	Model	Qty	Required Vent. CFM	Actual Terminal Primary Air CFM	Total Room Air (CFM)	Area Sq. Ft.	CFM/Sq. Ft	Actual Cooling GPM/Unit	EWT °F	LWT °F	Coil EAT DB °F	Coil EAT WB °F	LAT DB °F	LAT WB °F	Fluid PD /Unit	Coil Sensible Cooling BTU	Total Room Sensible BTU	Coil Latent BTU	Condensate Gallon/Hr	Total Latent BTU	Total Room Cooling BTU	Target Room Total BTU Cooling	Actual Heating GPM/Unit	EWT °F	LWT (°F)	Coil EAT DB °F (room return)	LAT DB °F	Fluid PD /Unit	Coil Sensible Heating BTU	Total BTU Heating	Target Room Total BTU Heating	NC Sound	Throw Terminal Velocity Under 100 fpm
8-CB-1	Single C611	159	1	4 Pipe	0.6	0.5	0.5	AIB-124-31	1	70	70	261	159	1.64	0.5	45	55.7	75	62.6	62.6	0	0.7	2530	4049	0	0	463	4512	1256	0.5	160	136.5	70	97.5	0.33	5616	5008	4747	NC24	9
8-CB-2	Single C610	211	1	4 Pipe	0.7	0.5	0.5	AIB-124-31	1	75	76	283	211	1.34	0.5	45	56.1	75	62.6	63.2	0	0.7	2622	4271	0	0	503	4773	3051	0.5	160	135.6	70	96.3	0.33	5824	5165	5040	NC26	10
8-CB-3	Double C613	172	1	4 Pipe	0.5	0.5	0.5	AIB-124-24	1	37.5	40	172	172	1	0.5	45	55.2	75	62.6	59.1	56.4	0.7	2222	3090	196	0.022	461	3551	2143	0.5	160	140.3	70	103.4	0.33	4713	4366	4307	NC26	6
8-CB-4	Double C613	172	1	4 Pipe	0.5	0.5	0.5	AIB-124-24	1	37.5	40	172	172	1	0.5	45	55.2	75	62.6	59.1	56.4	0.7	2222	3090	196	0.022	461	3551	2143	0.5	160	140.3	70	103.4	0.33	4713	4366	4307	NC26	6
8-CB-5	Double C612	145	1	4 Pipe	0.5	0.7	0.5	AIB-124-24	1	37.5	40	172	145	1.19	0.5	45	55.2	75	62.6	59.1	56.4	0.7	2222	3090	196	0.022	461	3551	2422	0.7	160	144.8	70	106	0.62	5084	4737	4592	NC25	6
8-CB-6	Double C612	145	1	4 Pipe	0.5	0.5	0.5	AIB-124-24	1	37.5	40	172	145	1.19	0.5	45	55.2	75	62.6	59.1	56.4	0.7	2222	3090	196	0.022	461	3551	2422	0.5	160	140.3	70	103.4	0.33	4713	4366	4592	NC26	6
8-CB-7	Equip Storage C615	137	1	4 Pipe	0.5	0.5	0.5	Mini Q-24	1	0	70	249	137	1.81	0.5	45	55.9	75	62.6	61.7	0	0.1	2581	4035	0	0	443	4478	1631	0.5	160	130.1	70	106.8	0.37	7135	6553	4488	NC21	10
8-CB-8	Nurse Station C617	205	5	4 Pipe	0.5	0.5	0.8	Mini Q-24	1	55	70	249	205	1.21	0.8	45	53	75	62.6	59.3	0	0.26	3040	4494	0	0	443	4937	4827	0.5	160	130.1	70	106.8	0.37	7135	6553	6109	NC21	10
8-CB-9	Nurse Manager C617A	116	3	4 Pipe	0.5	0.5	0.5	Mini Q-24	1	30	70	249	116	2.14	0.5	45	55.9	75	62.6	61.7	0	0.1	2581	4035	0	0	443	4478	3215	0.5	160	130.1	70	106.8	0.37	7135	6553	3897	NC21	10
8-CB-10	Medication C618	99	1	4 Pipe	0.6	0.5	0.5	AIB-222-38	1	75	52	215	99	2.17	0.5	45	52.4	75	62.6	65	0	0.07	1745	2866	0	0	342	3208	1092	0.5	160	150.5	70	95.9	0.02	2260	1811	3897	NC24	6
8-CB-11	Staff Lounge C623	156	6	4 Pipe	0.5	0.5	0.5	Mini Q-24	1	42	70	249	156	1.59	0.5	45	55.9	75	62.6	61.7	0	0.1	2581	4035	0	0	443	4478	4056	0.5	160	130.1	70	106.8	0.37	7135	6553	0	NC21	10
8-CB-12	Single C620	215	1	4 Pipe	0.7	0.5	0.5	AIB-124-31	1	75	76	283	215	1.32	0.5	45	56.1	75	62.6	63.2	0	0.7	2622	4271	0	0	503	4773	3270	0.5	160	135.6	70	96.3	0.33	5824	5165	5040	NC26	10
8-CB-13	Double C622	140	1	4 Pipe	0.5	0.6	0.5	AIB-124-24	1	37.5	40	172	140	1.23	0.5	45	55.2	75	62.6	59.1	56.4	0.7	2222	3090	196	0.022	461	3551	2450	0.6	160	142.8	70	105	0.46	4933	4586	4557	NC26	6
8-CB-14	Double C622	140	1	4 Pipe	0.5	0.6	0.5	AIB-124-24	1	37.5	40	172	140	1.23	0.5	45	55.2	75	62.6	59.1	56.4	0.7	2222	3090	196	0.022	461	3551	2450	0.6	160	142.8	70	105	0.46	4933	4586	4557	NC26	6
8-CB-15	Double C624	166	1	4 Pipe	0.5	0.5	0.5	AIB-124-24	1	30	40	172	166	1.04	0.5	45	55.2	75	62.6	59.1	56.4	0.7	2222	3090	196	0.022	461	3551	2000	0.5	160	140.3	70	103.4	0.33	4713	4366	3800	NC26	6
8-CB-16	Double C624	166	1	4 Pipe	0.5	0.5	0.5	Mini Q-24	1	30	70	249	166	1.5	0.5	45	55.9	75	62.6	61.7	0	0.1	2581	4035	0	0	443	4478	2000	0.5	160	130.1	70	106.8	0.37	7135	6553	3800	NC21	10
8-CB-17	Double C629	166	1	4 Pipe	0.5	0.5	0.5	AIB-124-24	1	30	40	172	166	1.04	0.5	45	55.2	75	62.6	59.1	56.4	0.7	2222	3090	196	0.022	461	3551	2125	0.5	160	140.3	70	103.4	0.33	4713	4366	3882	NC26	6
8-CB-18	Double C629	166	1	4 Pipe	0.5	0.5	0.5	Mini Q-24	1	30	70	249	166	1.5	0.5	45	55.9	75	62.6	61.7	0	0.1	2581	4035	0	0	443	4478	2125	0.5	160	130.1	70	106.8	0.37	7135	6553	3882	NC21	10
8-CB-19	Clean Room C628	155	0	4 Pipe	0.5	0.5	0.5	Mini Q-24	1	0	70	249	155	1.6	0.5	45	55.9	75	62.6	61.7	0	0.1	2581	4035	0	0	443	4478	471	0.5	160	130.1	70	106.8	0.37	7135	6553	0	NC21	10
8-CB-20	Single C635	139	1	4 Pipe	0.5	0.7	0.5	AIB-124-24	1	35	40	172	139	1.24	0.5	45	55.2	75	62.6	59.1	56.4	0.7	2222	3090	196	0.022	461	3551	2708	0.7	160	144.8	70	106	0.62	5084	4737	4698	NC26	6
8-CB-21	Single C630	141	1	4 Pipe	0.5	0.7	0.5	AIB-124-24	1	40	40	172	141	1.22	0.5	45	55.2	75	62.6	59.1	56.4	0.7	2222	3090	196	0.022	461	3551	2645	0.7	160	144.8	70	106	0.62	5084	4737	4728	NC26	6
8-CB-22	Single C637	140	1	4 Pipe	0.5	0.8	0.5	AIB-124-24	1	35	40	172	140	1.23	0.5	45	55.2	75	62.6	59.1	56.4	0.7	2222	3090	196	0.022	461	3551	2747	0.8	160	146.4	70	106.9	0.8	5201	4854	4823	NC26	6
8-CB-23	Single C632	140	1	4 Pipe	0.5	0.8	0.5	AIB-124-24	1	35	40	172	140	1.23	0.5	45	55.2	75	62.6	59.1	56.4	0.7	2222	3090	196	0.022	461	3551	2660	0.8	160	146.4	70	106.9	0.8	5201	4854	4823	NC26	6
8-CB-24	Single C639	140	1	4 Pipe	0.5	0.8	0.5	AIB-124-24	1	35	40	172	140	1.23	0.5	45	55.2	75	62.6	59.1	56.4	0.7	2222	3090	196	0.022	461	3551	2747	0.8	160	146.4	70	106.9	0.8	5201	4854	4823	NC26	6
8-CB-25	Single C634	140	1	4 Pipe	0.5	0.8	0.5	AIB-124-24	1	35	40	172	140	1.23	0.5	45	55.2	75	62.6	59.1	56.4	0.7	2222	3090	196	0.022	461	3551	2770	0.8	160	146.4	70	106.9	0.8	5201	4854	4823	NC26	6
8-CB-26	Single C642	140	1	4 Pipe	0.5	2	0.5	AIB-126-24	1	35	60	258	140	1.84	0.5	45	58.7	75	62.6	59.8	57.1	1.06	3188	4490	53	0.006	449	4940	4049	2	160	151.1	70	110.2	7.1	8520	7999	7477	NC26	6
8-CB-27	Single C636	142	1	4 Pipe	0.5	1.2	0.5	AIB-126-24	1	40	60	258	142	1.82	0.5	45	58.7	75	62.6	59.8	57.1	1.06	3188	4490	53	0.006	449	4940	3610	1.2	160	145.9	70	108.2	2.64	8082	7562	7507	NC26	6

AIR DEVICE SCHEDULE (SUPPLY)

MARK	TYPE	AIR FLOW MIN	AIR FLOW MAX	MAX APD	MOUNTING	PANEL/FRAME SIZE	NECK SIZE	NC	DAMPER	FINISH	BASIS OF DESIGN (OR APPROVED EQUAL)	REMARKS
		CFM	CFM	IN WG		IN x IN	IN					
CD-1	ADJUSTABLE SQUARE CONE DIFFUSER	-	100	0.030	RECESSED IN T-BAR CEILING	24X24	6	-	RADIAL OPPOSED BLADE	WHITE POWDER COAT	PRICE SCDA 4-CONE	-----
CD-2	ADJUSTABLE SQUARE CONE DIFFUSER	100	225	0.100	RECESSED IN T-BAR CEILING	24X24	8	17	RADIAL OPPOSED BLADE	WHITE POWDER COAT	PRICE SCDA 4-CONE	-----
CD-3	ADJUSTABLE SQUARE CONE DIFFUSER	225	360	0.120	RECESSED IN T-BAR CEILING	24X24	10	20	RADIAL OPPOSED BLADE	WHITE POWDER COAT	PRICE SCDA 4-CONE	-----

NOTES:
1. CONTRACTOR TO INSTALL PER THE MANUFACTURERS RECOMMENDATIONS.
2. CONTRACTOR TO COORDINATE FRAME AND MOUNTING TYPE WITH THE ARCHITECTS CEILING.

AIR DEVICE SCHEDULE (LINEAR)

MARK	TYPE	AIR FLOW MIN	AIR FLOW MAX	MAX APD	THROW	# OF SLOTS	SLOT WIDTH	PANEL/FRAME SIZE IN	NECK SIZE IN	THROW PATTERN	THROW TYPE	NC	DAMPER	FINISH	BASIS OF DESIGN (OR APPROVED EQUAL)	REMARKS
		CFM	CFM	IN WG	FT		IN									
LD-1	LINEAR	150	200	0.06	7-17-23	2	0.75	48 x 5	8ø	ADJUSTABLE	HORIZONTAL	20	NONE	WHITE	PRICE SDS WITH SDBI INSULATED PLENUM	-----
																-----

NOTES:
1. SEE DETAIL FOR DAMPER IN BRANCH DUCT SERVING EACH DIFFUSER.
2. PROVIDE COLLAR AND TRANSITION AS REQUIRED.
3. CONTRACTOR TO COORDINATE FRAME AND MOUNTING TYPE WITH THE ARCHITECTS CEILING TYPE.

AIR DEVICE SCHEDULE (EXHAUST)

MARK	TYPE	AIR FLOW MIN	AIR FLOW MAX	MAX APD	MOUNTING	PANEL/FRAME SIZE	NECK SIZE	NC	DAMPER	FINISH	BASIS OF DESIGN (OR APPROVED EQUAL)	REMARKS
		CFM	CFM	IN WG		IN x IN	IN x IN					
EG-1	PERFORATED	-	125	0.042	CEILING	12 x 12	6X6	-	NONE	WHITE POWDER COAT	PRICE PDDR	-----
EG-2	PERFORATED	100	250	0.083	CEILING	24 x 24	8X8	-	NONE	WHITE POWDER COAT	PRICE PDDR	-----
EG-3	PERFORATED	250	480	0.114	CEILING	24 x 24	10X10	-	NONE	WHITE POWDER COAT	PRICE PDDR	-----
EG-4	LOUVERED FACE	160	300	0.097	WALL	12x8	12x8	24	NONE	WHITE POWDER COAT	PRICE 530	3/4 INCH BLADE SPACING
EG-5	LOUVERED FACE	55	100	0.035	CEILING	8x8	8X8	-	NONE	WHITE POWDER COAT	PRICE 635	1-1/4 BORDER, COUNTERSUNK SCREWHOLES

NOTE:
1. CONTRACTOR TO INSTALL PER THE MANUFACTURERS RECOMMENDATIONS.
2. CONTRACTOR TO COORDINATE FRAME AND MOUNTING TYPE WITH THE ARCHITECTS CEILING AND APPLICATION.
3. CONTRACTOR TO PROVIDE 12x12 FRAME WHERE INDICATED ON DRAWINGS.
4. CONTRACTOR TO COORDINATE COLOR SELECTION WITH THE ARCHITECT.
5. CONTRACTOR TO PROVIDE TRANSITION BETWEEN DEVICE AND CONNECTION DUCT WORK.

FAN SCHEDULE

MARK	LOCATION	AREA AND/OR BLDG SERVED	SYSTEM AND/OR SERVICE	AIR FLOW	ESP	FAN TYPE	FAN WHEEL	FAN DIAMETER	FAN DRIVE	FAN MAX RPM	MOTOR ELECTRICAL NOMINAL POWER BHP	NOMINAL POWER HP	PHASE	VOLT	RPM	SPEED CONTROL	CONTROL SEQUENCE	BASIS OF DESIGN (OR APPROVED EQUAL)	REMARKS
				CFM	IN			IN											
EF-79	SHAFT #4 ROOF	6C, 7C ISO ROOMS	AC-08	1775	3.5	UTILITY SET	BACKWARD INCLINED	12.25	DIRECT	2710	1.6	5	3	208	1750	VARIABLE		GREENHECK 12-CSW-BI-41-4-100-II-50	PROVIDE VARIABLE FREQUENCY DRIVE, BACKDRAFT DAMPER, EQUIPMENT SUPPORT BASE RAILS.

NOTE
ALL SELECTIONS ARE BASED ON AN ALTITUDE OF 420 FT.

AIR FILTER SCHEDULE

MARK	LOCATION	AREA AND/OR BLDG SERVED	SYSTEM AND/OR SERVICE	MERV RATING	AIR FLOW	APD INITIAL	APD CHANGEOVER	HOUSING TYPE	CARTRIDGES #	CARTRIDGES SIZE IN	CARTRIDGES ARRANGEMENT	BASIS OF DESIGN (OR APPROVED EQUAL)	REMARKS
					CFM	IN	IN						
PFE-79	SHAFT#4 9TH FLOOR	6C ISO ROOMS	EF-79	8	1775	0.14	0.3	SIDE ACCESS	2	24X24X2	1X2	CAMFIL FARR 30/30	
HFE-79	SHAFT#4 9TH FLOOR	6C ISO ROOMS	EF-79	20	1775	0.8	1.5	SIDE ACCESS	2	24x24x12	1X2	CAMFIL FARR XS ABSOLUTE	PROVIDE GB GASKET SEAL BIBO HOUSING WITH DUCT FLANGES, STATIC RPESSURE TAPS ACROSS BOTH PRE AND HEPA FILTES, AND 0-2" W.G. DIFFERENTIAL PRESSURE GAGE EACH FILTER

100% FOR CONSTRUCTION
FULLY SPRINKLERED

Revisions	Date

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Reviewed: Facility Manager
Reviewed: Facility Director
Reviewed:
Reviewed:

Drawing Title: MECHANICAL SCHEDULES
Approved: Project Director

Project Title: **RENOVATION FOR 6C**
Building Number: NO. 1
Location: VAMC SYRACUSE, NY
Checked: GFE/AF
Drawn: VRR

Date: 12-04-2015
Project No.: 528A7-14-719
DRAWING NO.: MG-601
Dwg. 37 Of 74

VA HEALTHCARE NETWORK UPSTATE NEW YORK
Department of Veterans Affairs

VA FORM 08-6231

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HOT WATER HEATING COIL SCHEDULE

MARK	LOCATION	AREA AND/OR BLDG SERVED	APPLICATION	AIR FLOW	MAX FACE VELOCITY	APD	TEMPERATURES		TOTAL MIN CAPACITY	HOT WATER				% GLYCOL	BASIS OF DESIGN OR APPROVED EQUAL
							EAT	LAT		FLOW	EWT	LWT	WPD		
				CFM	FPM	IN WG	°F	°F	MBH	GPM	°F	°F	FT		
HWC-1	ISOLATION C626	ISOLATION C626	REHEAT	200	320	0.07	55	104	10.96	1	180	160	0.02	0	HEATCRAFT
HWC-2	ISOLATION C626	ISOLATION C626	REHEAT	200	320	0.07	55	104	10.96	1	180	160	0.02	0	HEATCRAFT

NOTES:
1. INSTALL PER THE MANUFACTURERS INSTALLATION INSTRUCTIONS.
2. CONTRACTOR IS RESPONSIBLE FOR DUCTED TRANSITIONS FOR THE COILS.

ROOM AIR BALANCE SCHEDULE

ROOM NAME & NUMBER	AIR HANDLING UNIT NO	TERMINAL UNIT OR CHILLED BEAM	INDIVIDUAL ROOM TEMP CONTROL	SUPPLY							RETURN OR EXHAUST				ROOM AIR FLOW		ROOM AIR BALANCE	NET INFILTRATION	NET EXFILTRATION	REMARKS
				ROOM AIR FLOW	TOTAL AIR CHANGES	OUTDOOR AIR FLOW	OA AIR CHANGES	# OF AIR DEVICES	AIR DEVICE MARK	SUPPLY FAN	RETURN OR EXHAUST (R/E)	ROOM AIR FLOW	# OF AIR DEVICES	AIR DEVICE MARK	RETURN OR EXHAUST FAN	CV	VAV			
				CFM		CFM						CFM							CFM	CFM	
Corridor C600A	AC-8	8-TU-4	YES	255	4	255	4	2	CD-2		EXHAUST	200	1	EG-2	EF-08		X	+		55	
Corridor C600B	AC-8	8-TU-5	YES	355	4	355	4	3	CD-2		EXHAUST	250	1	EG-2	EF-08		X	+		105	
Corridor C600C	AC-8	8-TU-6	YES	350	4	350	4	3	CD-2		EXHAUST	250	1	EG-2	EF-08		X	+		100	
Corriord C600D	AC-8	8-TU-6	NO	90	5	90	5	1	CD-1		NA						X	+		90	
Single C611	AC-8	8-CB-1	YES	261	12	75	4	1	8-CB-1		NA					X		o			2
Toilet C611A	AC-8	8-CB-1	YES	NA	10	NA	NA				EXHAUST	75	1	EG-5	EF-08	X		- -	75		1
Single C610	AC-8	8-CB-2	YES	283	13	70	3	1	8-CB-2		NA					X		o			2
Toilet C610A	AC-8	8-CB-2	YES	NA	10	NA	NA				EXHAUST	70	1	EG-5	EF-08	X		- -	70		1
Double C613	AC-8	8-CB-4 & 8-CB-3	YES	344	9	80	2	2	8-CB-4 & 8-CB-3		NA	80	1	EG-5		X		o			2
Toilet C613A	AC-8	8-CB-4 & 8-CB-3	YES	NA	10	NA	NA				EXHAUST	80	1	EG-5	EF-08	X		- -	80		1
Double C612	AC-8	8-CB-6 & 8-CB-5	YES	344	9	80	2	2	8-CB-6 & 8-CB-5		NA					X		o			2
Toilet C612A	AC-8	8-CB-6 & 8-CB-5	YES	NA	10	NA	NA				EXHAUST	80	1	EG-5	EF-08	X		- -	80		
Equipment Storage C615	AC-8	8-CB-7	YES	249	14	70	4	1	8-CB-7		EXHAUST	50	1	EG-1	EF-08	X		+		20	
HAC C614	AC-8	2	NO	100	25	NA	NA				EXHAUST	100	1	EG-5	EF-08	X		- -	100		3
Nurse Station C617	AC-8	8-CB-8	YES	249	9	70	3	1	8-CB-8									o			4
Nurse Manager C617A	AC-8	8-CB-9	YES	249	16	70	5	1	8-CB-12		EXHAUST	70	1	EG-1	EF-08	X		o			
Medication C618	AC-8	8-CB-10	YES	166	13	35	3	1	8-CB-10		EXHAUST	25	1	EG-1	EF-08	X		+		10	2
Staff Lounge C623	AC-8	8-CB-11	YES	249	12	70	3	1	8-CB-11		EXHAUST	80	1	EG-1	EF-08	X		-	10		
Single C620	AC-8	8-CB-12	YES	283	13	75	4	1	8-CB-12									o			2
Toilet C620A	AC-8	8-CB-12	YES	NA	10	NA	NA				EXHAUST	75	1	EG-5	EF-08	X		- -	75		1
Staff Alcove	AC-8	8-TU-6	NO	45	4	45	4	1	CD-1		EXHAUST	50	1	EG-1	EF-08	X		+			COMMON TO CORRIDOR
Staff Toilet C625	AC-8	8-TU-6	YES	NA	10	NA	NA				EXHAUST	75	1	EG-5	EF-08	X		- -	75		5
Double C622	AC-8	8-CB-14 & 8-CB-13	YES	344	9	80	2	2	8-CB-14 & 8-CB-13							X		o			2
Toilet C622A	AC-8	8-CB-14 & 8-CB-13	YES	NA	10	NA	NA				EXHAUST	80	1	EG-1	EF-08	X		- -	80		1
Double C624	AC-8	8-CB-16 & 8-CB-15	YES	421	14	110	4	2	8-CB-16 & 8-CB-15							X		o			2
Toilet C624A	AC-8	8-CB-16 & 8-CB-15	YES	NA	10	NA	NA				EXHAUST	110	1	EG-5	EF-08	X		- -	110		1
Double C629	AC-8	8-CB-18 & 8-CB-17	YES	421	14	110	4	2	8-CB-18 & 8-CB-17									o			2
Toilet C629A	AC-8	8-CB-18 & 8-CB-17	YES	NA	10	NA	NA				EXHAUST	110	1	EG-5	EF-08	X		- -	110		1
Single C626	AC-8	8-TU-2	YES	215	12	215	12	1	LD-1		EXHAUST	160	1	EG-4	EF-79		X	-	15		2
Toilet C626A	AC-8	8-TU-2	YES	NA	10	NA	NA				EXHAUST	55	1	EG-5	EF-79		X	- -	55		1
Single C631	AC-8	8-TU-3	YES	215	12	215	12	1	LD-1		EXHAUST	160	1	EG-4	EF-79		X	-	15		2
Toilet C631A	AC-8	8-TU-3	YES	NA	10	NA	NA				EXHAUST	55	1	EG-5	EF-79		X	- -	55		1
Soiled Utility C633	AC-8	8-TU-1	YES	100	8	70	6	1	CD-1		EXHAUST	100	1	EG-5	EF-08	X		- -	30		
Clean Room C628	AC-8	8-CB-19	YES	249	12	70	3	1	8-CB-19		EXHAUST	50	1	EG-1	EF-08	X		+		20	
Single C635	AC-8	8-CB-20	YES	172	9	40	2	1	8-CB-20							X		o			2
Toilet C635A	AC-8	8-CB-20 & 8-CB-22	YES	NA	10	NA	NA				EXHAUST	85	1	EG-5	EF-08	X		- -	85		1
Single C630	AC-8	8-CB-21	YES	172	9	40	2	1	8-CB-21							X		o			
Toilet C630A	AC-8	8-CB-21 & 8-CB-23	YES	NA	10	NA	NA				EXHAUST	85	1	EG-5	EF-08	X		- -	85		
Single C637	AC-8	8-CB-22	YES	172	9	40	2	1	8-CB-22							X		o			
Single C632	AC-8	8-CB-23	YES	172	9	40	2	1	8-CB-22							X		o			
Single C639	AC-8	8-CB-24	YES	172	9	40	2	1	8-CB-24							X		o			
Toilet C639A	AC-8	8-CB-24 & 8-CB-26	YES	NA	10	NA	NA				EXHAUST	100	1	EG-5	EF-08	X		- -	100		
Single C634	AC-8	8-CB-25	YES	172	9	40	2	1	8-CB-25							X		o			
Toilet C634A	AC-8	8-CB-25 & 8-CB-27	YES	NA	10	NA	NA				EXHAUST	100	1	EG-5	EF-08	X		- -	100		
Single C641	AC-8	8-CB-26	YES	258	14	60	3	1	8-CB-26							X		o			
Single C636	AC-8	8-CB-27	YES	258	14	60	3	1	8-CB-27							X		o			

NOTE

1. TOILET ROOM VENTILATION IS ACHIEVED BY EXHAUST AND TRANSFER FROM THE ADJACENT PATIENT ROOM(S).
2. PATIENT ROOMS EXHAUST IS ACHIEVED THROUGH TRANSFER TO THE CONNECTED TOILET ROOM. THE TOILET ROOM MAKES ALL PATIENT ROOMS NEUTRAL RELATIVE TO THE CORRIDOR.
3. HAC ROOMS ARE EXHAUST ONLY, HEATING AND COOLING IS ACHIEVED THROUGH TRANSFER AIR FROM THE CORRIDOR.
4. NURSE STATION EXHAUST IS ACHEVED THROUGH TRANSFER TO THE ADJACENT CORRIDOR.
5. STAFF TOILET ROOM IS HEATING ONLY AND IS SUPPLIED BY A RADIANT WALL PANEL. SUPPLY AIR IS TRANSFERRED FROM ADJACENT CORRIDOR.

100% FOR CONSTRUCTION

FULLY SPRINKLERED

Revisions	Date

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Reviewed: Facility Manager
Reviewed: Facility Director
Reviewed:
Reviewed:

Drawing Title: MECHANICAL SCHEDULES

Approved: Project Director

Project Title: **RENOVATION FOR 6C**

Building Number: NO. 1 | Checked: JAS | Drawn: PNL

Location: VAMC SYRACUSE, NY

Date: 12-04-2015

Project No.: 528A7-14-719

DRAWING NO.: MG-602

Dwg. 38 Of 74

VA HEALTHCARE NETWORK UPSTATE NEW YORK

Department of Veterans Affairs

VA FORM 08-6231

three inches = one foot
one and one half inches = one foot
one inch = one foot
three quarters inch = one foot
one half inch = one foot
three eighths inch = one foot
one quarter inch = one foot
one eighth inch = one foot

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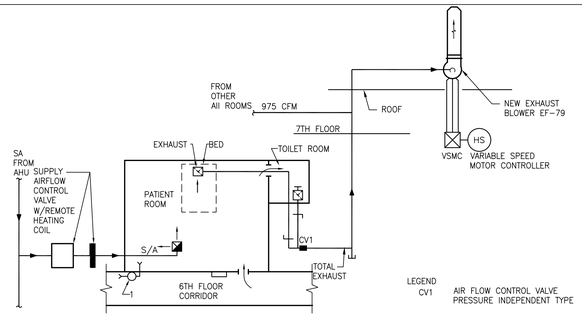


GENERAL NOTES:

1. PROVIDE ROOM PRESSURE CONTROLLER WITH BACNET CONNECTIVITY TO MONITOR AND MAINTAIN ROOM TEMPERATURE AND PRESSURE AS INDICATED. PROVIDE ALL NECESSARY SENSORS, ALARMS, RELAYS, CONTACTS, AND MOUNTING HARDWARE FOR A COMPLETE INSTALLATION (EQUAL TO TSI RPC 30 (D.O.)).
2. NEW DEDICATED EXHAUST FAN WITH VARIABLE SPEED DRIVE (EF-79) SHALL BE USED FOR THIS APPLICATION. EXHAUST FAN STATIC PRESSURE CONTROLS SHALL BE RE-BALANCED TO ACHIEVE AIR QUANTITIES SPECIFIED ON PLANS FOR ALL MODES OF OPERATION.
3. PRESSURE MAINTENANCE SHALL BE ACCOMPLISHED BY HOLDING THE EXHAUST AIR QUANTITY CONSTANT AT 12 AIR CHANGES PER HOUR AND MODULATING THE SUPPLY AIR QUANTITY THROUGH THE VAV TERMINAL UNIT.
4. PROVIDE DIFFERENTIAL PRESSURE SENSING BETWEEN PATIENT ROOM AND CORRIDOR.
5. PROVIDE A MAGNETIC CONTACT AT THE ENTRY DOOR TO THE ROOM TO SUSPEND MODULATION OF SUPPLY AND EXHAUST AIR TERMINAL UNITS WHEN THE DOOR IS OPEN AND TO PREVENT NUISANCE ALARMS UNTIL SUCH TIME THAT ROOM PRESSURE MEASUREMENT HAS STABILIZED.

SEQUENCE OF OPERATION:

NORMAL MODE:

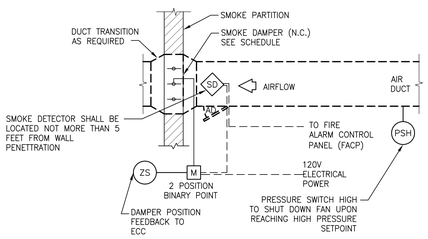
1. ISOLATION ROOM CONTROL PANEL SHALL MONITOR ROOM PRESSURE AND CONTROL DEVICES AS REQUIRED TO MAINTAIN DIFFERENTIAL PRESSURE SETTINGS.
2. IN NORMAL MODE, AS INDEXED MANUALLY THROUGH THE ROOM TEMPERATURE/PRESSURE CONTROLLER, SUPPLY AIRFLOW CONTROL VALVE SHALL MODULATE BETWEEN MINIMUM (150 CFM, ADJUSTABLE) AND MAXIMUM (200 CFM, ADJUSTABLE) AIRFLOW AS REQUIRED TO MAINTAIN ROOM TEMPERATURE SETPOINT (75'F COOLING, 70'F HEATING, ADJUSTABLE) IN ACCORDANCE WITH THE ASSOCIATED ROOM THERMOSTAT.
3. PRESSURE INDEPENDENT EXHAUST AIRFLOW CONTROL VALVE SHALL MODULATE IN UNISON WITH SUPPLY AIRFLOW CONTROL VALVE TO ALLOW "SUPPLY AIR QUANTITY PLUS 50 CFM (ADJUSTABLE)" EXHAUST FROM PATIENT ROOM (⅔ TOTAL EXHAUST) AND ASSOCIATED TOILET ROOM (⅓ TOTAL EXHAUST).

ISOLATION MODE:

1. UPON BEING INDEXED TO ISOLATION MODE MANUALLY THROUGH THE ROOM TEMPERATURE/PRESSURE CONTROL PANEL, THE EXHAUST AIRFLOW CONTROL VALVE SHALL MODULATE OPEN TO EXHAUST A SET QUANTITY OF AIR (400 CFM, ADJUSTABLE).
2. THE SUPPLY AIRFLOW CONTROL VALVE SHALL MODULATE AS REQUIRED TO MAINTAIN SUPPLY AIRFLOW 15% LESS THAN EXHAUST AIRFLOW.
3. IF DURING ISOLATION MODE THE ENTRY DOOR TO THE ROOM OPENS, THE MODULATION OF THE SUPPLY AIRFLOW CONTROL VALVE SHALL BE SUSPENDED UNTIL SUCH TIME AS THE DOOR IS CLOSED AND THE DIFFERENTIAL PRESSURE HAS STABILIZED.
4. A LOCAL AUDIBLE AND VISUAL ALARM WITH ANNUNCIATION AT A REMOTE MONITORING POINT SHALL OCCUR IF THE ENTRY DOOR REMAINS OPEN FOR A SET AMOUNT OF TIME (60 SECONDS, ADJUSTABLE) OR IF THE SYSTEM FAILS TO MAINTAIN THE DIFFERENTIAL PRESSURE FOR A SET AMOUNT OF TIME (2 MINUTES, ADJUSTABLE).

1 AIR SYSTEM FOR AIRBORNE INFECTIOUS ISOLATION ROOM (AII) (WITHOUT ANTEROOM)

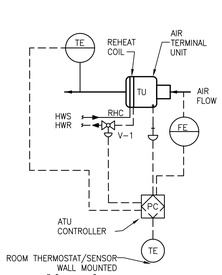
NTS NEGATIVE PRESSURE



NOTE:
UPON DETECTION OF SMOKE BY THE SMOKE DETECTOR, THE SMOKE DAMPER SHALL CLOSE, A SUPERVISORY ALARM SHALL BE SENT TO CONSTANTLY ATTENDED STATION (FIRE COMMAND CENTER). THE FACP SHALL SEND A SIGNAL TO THE BUILDING MANAGEMENT SYSTEM (BMS) AND THE ASSOCIATED AIR HANDLING UNIT SHALL BE DE-ENERGIZED.

2 SMOKE DAMPER CONTROL DIAGRAM

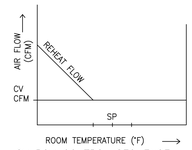
NTS



NO SUPPLEMENTAL HEATING

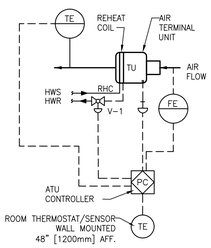
3 CONSTANT VOLUME AIR TERMINAL UNIT CONTROL DIAGRAM

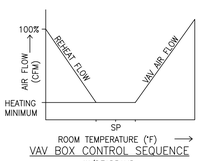
NTS



CV BOX CONTROL SEQUENCE
W/DEADBAND

A. SET POINTS SHALL SET AS FOLLOWS:
COOLING 75' F (ADJ)
HEATING 70' F (ADJ)
DEADBAND OF 5' F BETWEEN HEATING AND COOLING SET POINT WILL BE MAINTAINED
B. UPON FALL IN SPACE TEMPERATURE BELOW SET POINT VALVE V-1 WILL MODULATE TO MAINTAIN SET POINT ± .5',THE ADJUSTABLE TOLERANCE OF ± .5' HAS BEEN SELECTED TO PREVENT VALVE HUNTING
C. THE REVERSE SHALL OCCUR ON RISE IN SPACE TEMPERATURE.





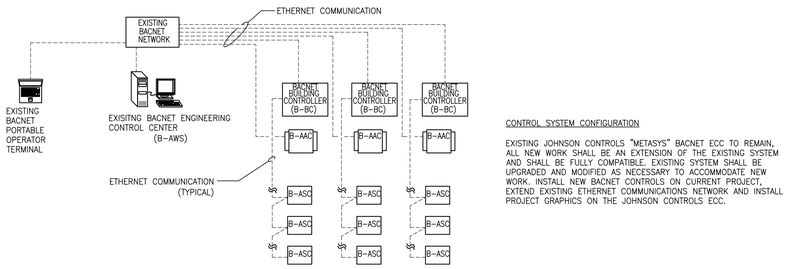
VAV BOX CONTROL SEQUENCE
W/DEADBAND

A. SET POINTS SHALL BE SET AS FOLLOWS:
COOLING 75'F (ADJ)
HEATING 70'F(ADJ)
DEADBAND OF 5' F BETWEEN HEATING AND COOLING SET POINTS WILL BE MAINTAINED.
B. UPON FALL IN SPACE TEMPERATURE THE VAV DAMPER WILL MODULATE TO MINIMUM POSITION.
C. UPON FURTHER DROP IN SPACE TEMPERATURE THE VAV VALVE V-1 AND DAMPER WILL MODULATE OPEN TO MAINTAIN SET POINT ± .5' F. THE ADJUSTABLE TOLERANCE OF ± .5' F HAS BEEN SELECTED TO PREVENT VALVE HUNTING
D. THE REVERSE SHALL OCCUR ON THE RISE IN SPACE TEMPERATURE.

NO SUPPLEMENTAL HEATING

4 VARIABLE VOLUME AIR TERMINAL UNIT CONTROL DIAGRAM

NTS



CONTROL SYSTEM CONFIGURATION

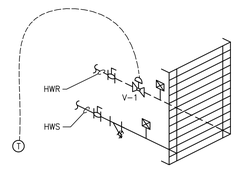
EXISTING JOHNSON CONTROLS "METASYS" BACNET ECC TO REMAIN, ALL NEW WORK SHALL BE AN EXTENSION OF THE EXISTING SYSTEM AND SHALL BE FULLY COMPATIBLE. EXISTING SYSTEM SHALL BE UPGRADED AND MODIFIED AS NECESSARY TO ACCOMMODATE NEW WORK. INSTALL NEW BACNET CONTROLS ON CURRENT PROJECT, EXTEND EXISTING ETHERNET COMMUNICATIONS NETWORK AND INSTALL PROJECT GRAPHICS ON THE JOHNSON CONTROLS ECC.

NOTES:

1. PROVIDE NEW BACNET CONTROLLERS ON ALL EXISTING EQUIPMENT WITHIN THE SCOPE OF THIS PROJECT TO REMAIN AND BE RE-USED WHERE EXISTING UNIT CONTROL IS NOT BACNET COMPATIBLE.
2. INSTALL NEW ETHERNET COMMUNICATION NETWORK ON ALL NEW EQUIPMENT.
3. INSTALL MULTIPLE BUILDING CONTROLLERS (B-BC) AS REQUIRED.
4. INSTALL NEW CONTROLLERS (B-AAC, B-ASC) AS REQUIRED.

5 BACNET SYSTEM ARCHITECTURE

NTS



RADIANT PANEL CONTROL SEQUENCE

A. HEATING SET POINT SHALL BE 70' F (ADJ).
B. UPON FALL IN SPACE TEMPERATURE BELOW SET POINT VALVE V-1 WILL MODULATE OPEN TO MAINTAIN SET POINT,
C. THE REVERSE SHALL OCCUR ON RISE IN SPACE TEMPERATURE.
D. IN THE EVENT OF A POWER FAILURE, VALVE SHALL FAIL OPEN.

6 RADIANT WALL PANEL CONTROL DIAGRAM

NTS

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Revisions	Date

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LICENSED PROFESSIONAL ENGINEER

Reviewed: Facility Manager
Reviewed: Facility Director
Reviewed:
Reviewed:

Drawing Title: MECHANICAL CONTROL DIAGRAMS
Approved: Project Director

Project Title: **RENOVATION FOR 6C**
Building Number: NO. 1
Checked: JAS
Drawn: PNL
Location: VAMC SYRACUSE, NY

Date: 12-04-2015
Project No.: **528A7-14-719**
DRAWING NO.: MG-603
Dwg. 39 Of 74

VA HEALTHCARE NETWORK UPSTATE NEW YORK
Department of Veterans Affairs

VA FORM 08-6231

three inches = one foot
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three quarters inch = one foot
one half inch = one foot
three eighths inch = one foot
one quarter inch = one foot
one eighth inch = one foot
P:\0499_VA\03-0499-0060 Syracuse 6c Renovation\2_Drawings\1_Cad\1_Current Submittal Phase\6_Mechanical\MG-603.dwg 12-02-15 03:55:14 PM jsalerno